Prepared for:

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MESA-BIERE 1-22 GROUNDWATER INVESTIGATION, NORTHEASTERN MONTANA

SEMIANNUAL MONITORING REPORT

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Project Number PNR0522

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1. INTRODUCTION

The Mesa-Biere 1-22 groundwater monitoring network is located near the southern portion of the East Poplar Oil Field in the Williston Basin and northeast of the City of Poplar, Montana, within the Fort Peck Indian Reservation (the Site). The Mesa-Biere production well was successfully plugged in 2000. Since that time, Pioneer Natural Resources (Pioneer) has conducted numerous hydrogeologic studies of the Mesa-Biere 1-22 well site and surrounding area in accordance with the U.S. Environmental Protection Agency (EPA) Emergency Administrative Order upon Consent (EAOC) #SWDA 08-2001-0027. Site investigations to date have included the drilling and installation of monitoring wells, multiple aquifer tests to define site aquifer properties, extensive borehole and surface geophysical investigations, and the design and installation of a groundwater remediation system comprised of 12 brine recovery wells, 2 tank batteries, and a Class V injection well.

The Mesa-Biere groundwater program includes sampling of area monitoring wells, domestic wells, and brine recovery wells for total dissolved solids (TDS), chloride, and in some cases benzene, toluene, ethylbenzene, and total xylenes (BTEX). Twelve years of groundwater sampling and data collection across the site has shown reduced contaminate concentrations and has resulted in reduced monitoring requirements.

This report summarizes groundwater sampling results from the most recent monitoring event conducted October 9 through October 25, 2012. Geosyntec is submitting this report on behalf of Pioneer in response to, and in accordance with, the U.S. EPA EAOC and the September 2011 U.S. EPA modified sampling and analysis plan for the Mesa-Biere 1-22 Groundwater Monitoring project.

Site activities during October 2012 included monitoring of 36 monitoring wells, 4 domestic wells, and 12 brine recovery wells. Groundwater monitoring included measurement of static water levels, onsite field parameters (conductivity, temperature, pH, and dissolved oxygen) and collection of groundwater samples for analysis of TDS, chloride, and BTEX. Groundwater sampling was conducted in accordance with the project groundwater sampling and analysis plan and U.S. EPA-approved protocols and methods.

2. SITE DESCRIPTION AND BACKGROUND

2.1 Site Location

The Mesa-Biere 1-22 Groundwater project site is located in the southern portion of the East Poplar Oil Field in Roosevelt County, northeast of the City of Poplar, Montana. The site monitoring network extends from the Mesa-Biere 1-22 production well source area in the SW quarter of Sec.22, T28N, R51E, to include wells in Sections 15, 16, 21, 27, 28, and 29 (Figure 1). The study area spans both ancestral and modern terraces that trend west toward the Poplar River Valley, located approximately 2 miles west of the production well location.

Area topography generally consists of a broad glacial bench with low relief, dissected by the Poplar River and its tributaries. Current land surfaces are the result of the effects of Pleistocene glaciation in conjunction with the erosional features of large rivers to the west and south of the project area, the Poplar River and the Missouri River respectively.

Soils surrounding the Mesa-Biere site are predominately Dooley sandy to clay loam calcium carbonate soil, exhibiting slow runoff with moderately slow or slow permeability (Montana SSURGO soils database, NRCS[2012]). Soils are fine textured and nonhydric with low organic composition. Water holding capacity for the soils is somewhat limited and depth to water in this soil type is typically greater than 6 feet.

2.2 Site History

Drilled and completed by Mesa Petroleum (Mesa) on June 8, 1970, the Mesa-Biere 1-22 production well was operated for a total of 10 years, from 1970-1972 and from 1976-1984. In 1986 the well was plugged and abandoned by Mesa due to a casing leak. In June of 1985, within 9 months of plugging the production well, fluid flowed to the surface at the Mesa-Biere 1-22. In response, Mesa drilled a relief well to the north-northeast of the production well location and injected additional cement into the formation, which appeared to successfully stop the flow of water. In 1997 Mesa merged with Parker & Parsley Petroleum, forming Pioneer.

In 1999, a number of the area residents and the U.S. EPA filed suit against four of the companies with holdings in the East Poplar Unit: Murphy Oil and Gas, Samson Hydrocarbon, Marathon Oil, and Pioneer. The respondents joined in an EAOC with U.S. EPA (#SDWA 8-99-68, which was later replaced with the current #SWDA 08-2004-0035) with the conditions that the companies conduct a public water supply threat study and construct a public water system to provide the affected landowners with municipal water from the City of Poplar.

As per the original EAOC, in May 2000 Pioneer installed 8 monitoring wells in the immediate vicinity of the Mesa-Biere 1-22 well site for further investigation. Analytical and field results from the initial round of sampling, which included 2 existing monitoring wells and 4 domestic wells, indicated that the Mesa-Biere 1-22 well was an ongoing source of groundwater contamination. It was determined that oil-field produced water along with some associated crude oil was channeling upward into the shallow drinking water aquifer (Jacobs et al., 2008). In a separate U.S. EPA EAOC (#SWDA 08-2001-0027), Pioneer was required to plug the Mesa-Biere 1-22 well and conduct further sampling.

In July of 2001 with the approval of the U.S. EPA, Pioneer drilled 3 injection wells to the Judith River Formation and re-entered the old relief well. The 4 wells were then used to pump Halliburton's Injectrol product to seal off the brine leak from the Mesa-Biere 1-22 well. In the 11 years since the successful re-entry and plugging of the production well, Pioneer has worked diligently to accurately characterize, delineate, and monitor the resultant contaminant plume. Pioneer voluntarily designed, constructed, and presently operates and maintains a site groundwater remediation system, which exceeds the requirements of the EAOC.

The Mesa-Biere 1-22 groundwater remediation system became operational in August of 2008. The system is composed of 12 brine extraction wells, 6 product recovery wells in the plume proper, 2 tank batteries, and a 7,800-foot Class V, U.S.EPA-permitted injection well (PNR SWD-1). The injection well is permitted for disposal of 10,000 barrels per day (bbl/d) of contaminated groundwater into the Mississippian, Mission Canyon, and Devonian Nisku Formations, far below and hydrologically separate from the affected shallow aquifers comprising the study area.

To date the remediation system has removed over 226,915,038 gallons (5,402,739 bbls) of brine-contaminated water, an estimated 37.5% of the total plume volume at a current rate of approximately 214,200 gallons (5,100 bbls) per day from the aquifer. Pioneer continues to monitor system performance through an extensive monitoring network and geophysical surveys to maximize the remediation system effectiveness.

2.3 Geology and Hydrogeology

The Site is located near the western boundary of the Williston Basin, in close proximity to the center of the Poplar Anticline a result of the Laramide Orogeny during the late Cretaceous and early Paleocene (Hamke, 1966). The Poplar Anticline is estimated to be 10 miles north of the City of Poplar, trending northwest and is approximately 30 miles long and 25 miles wide (Hamke, 1966).

Area surface geology is composed of thick Pleistocene glacial deposits atop the benches. Glacial deposits have been dissected and are replaced and overlain in the alluvial valleys by more recent Holocene alluvium, comprised of fine- to coarse-grained floodplain deposits of the Missouri River and its major tributaries, including the Poplar River, west of the project location (Colton, 1963). These Holocene alluvial deposits are predominately silty in nature with local gravel lenses. This unit can also include colluvial and lacustrine deposits as well as remnants of glacial outwash.

Holocene and Pleistocene sediments are underlain by the Upper Cretaceous Bearpaw Shale, a relatively thick and essentially impervious formation ranging from 700 to 1,000 feet in thickness (Thamke and Craigg, 1997). The Bearpaw Shale is comprised primarily of marine shale and claystone with thin beds of bentonite clays, and dips generally to the west.

The water-bearing Quaternary sand and gravel deposits (the Wiota Gravel, alluvium, and alluvium/fan colluvium) are the primary developed source of groundwater for area residents. Water within these deposits generally occurs under unconfined conditions, although due to the heterogeneous nature of the sediments, confined and semiconfined conditions occur as well. Low permeability of the underlying Bearpaw Shale prohibits any significant vertical flow or transport. Regionally the depth to water can range from 7 to 130 feet in the glacial deposits, and from 5 to 44 feet in the alluvium (Thamke et al., 1996).

The Mesa-Biere 1-22 well site is located on the Biere upper terrace, an ancestral bench of the Poplar River and is underlain by Quaternary deposits of varying thickness. Wells located on the Biere upper terrace exhibit an average depth to the upper Wiota Gravel aquifer of approximately 41 feet below ground surface (bgs) and a depth to the Bearpaw Shale of 62 feet bgs. The Wiota aquifer is no longer used as a domestic water supply source in the vicinity of the Mesa-Biere 1-22 well.

Regional groundwater flow is primarily toward the Poplar River Valley to the west of the project area, and then south along the Poplar River alluvium toward the Missouri River Valley. Local variations in the regional groundwater flow path have been identified within the study area on the Biere upper terrace. Groundwater flow and transport are limited by the thinning and absence of the Wiota Gravel and areas of low hydraulic conductivity along the western portion of the study area (HKM, 2007; DBS&A, 2007; SSP&A, 2008).

3. FIELD INVESTIGATIONS

The October 2012 semiannual sampling event was conducted from October 9 through October 25, 2012, and consisted of the following tasks:

- Measurement of static water levels for 42 monitoring wells, 5 domestic wells, and 12 brine recovery wells within the PNR monitoring network;
- Monitoring of groundwater field parameters, including conductivity, temperature, pH, and dissolved oxygen; and
- Collection of groundwater samples from 36 monitoring wells, 4 domestic wells, and 12 brine recovery wells for analysis of TDS, chloride, and BTEX.

All operating procedures for sampling were conducted in accordance with the Mesa-Biere 1-22 groundwater investigation sampling and analysis plan and U.S. EPA-approved protocols and methods.

3.1 Groundwater Level Measurements

Water level measurements were measured using an electronic interface probe capable of detecting water and light nonaqueous-phase liquid (LNAPL) with a precision of 0.01 foot. Project personnel recorded static water levels prior to purging and sampling of each well (Table 1). Measureable product was detected in three of the monitoring wells (PNR-17, PNR-25, and PNR-26) and is summarized in Table 1.

Monitoring well and domestic well water levels measured during the sampling event ranged from 1853.88 feet above mean sea level (feet msl) at MOC-20B in the lower ancestral Poplar River terrace, to 2106.05 feet msl at PNR-6, in the older terrace to the east of the Mesa-Biere 1-22. The static water levels on the Biere upper terrace ranged from 1952.54 to 2057.19 feet msl, averaged 2033.36 feet msl, and had a average depth of 42.76 feet bgs. October 2012 static water levels indicate a localized site flow direction to the south-southwest with an average hydraulic gradient of approximately 0.001 (Figure 1).

3.2 Groundwater Sampling

Groundwater samples were collected from 36 monitoring wells, 4 domestic wells, and 12 recovery wells. Field parameters were measured in a flow through cell for all monitoring and domestic wells, and a clean sample container for the recovery wells. Once field parameters had stabilized, samples were collected, preserved, and stored as directed by the analytical laboratory. Quality control samples comprised approximately

10 percent of the total set submitted for laboratory analysis. Percent differences of field duplicate groundwater sample constituents did not exceed 10 percent for any sample. Groundwater sampling and decontamination proceedures were conducted in accordance with the project sampling and analysis plan and U.S. EPA-approved protocols and methods.

Prior to sample collection, monitoring and domestic wells were purged by use of a decontaminated portable submersible pump. The brine recovery wells operate with dedicated pumps on a continuous basis, requiring minimal additional purging prior to sample collection.

4. ANALYSIS AND OBSERVATIONS

Groundwater samples were analyzed by Energy Laboratory for TDS and chlorides, the two primary established indicator parameters for the brine contamination, as well as for BTEX according to the modified U.S. EPA sampling agreement. Analytical results are summarized in Tables 2 through 4. Complete analytical reports are provided in Appendix A.

4.1 Monitoring Well Network

The Mesa-Biere 1-22 groundwater monitoring well network is comprised of 37 wells. Monitoring wells are sampled on either a semiannual or annual schedule based on legacy water chemistry data and approved by the U.S. EPA and, in accordance with, the EAOC. Analytical results from the October 2012 annual event for groundwater sampling of field and inorganic constituents from 40 monitoring wells are presented in Table 2, and BTEX constituents from 9 monitoring wells are presented in Table 3.

4.1.1 Source Area Wells

Wells PNR-5, PNR-14, and PNR-23 are the closest wells within the monitoring network to the source area in the vicinity of the Mesa-Biere 1-22 production well. TDS concentrations in PNR-14 and PNR-23 showed no significant change since the last sampling event, while concentrations in PNR-5 decreased by 29 percent compared to September 2011 values. TDS concentrations overall in these wells closest to the source area have decreased by an average 68 percent since the activation of the remediation system. Chloride concentrations within the source area have decreased by an average of 18 percent since September 2011 and by 81 percent since the remediation system became operational.

4.1.2 Western Boundary

The westernmost extent and boundary of the brine plume is defined by 7 wells (PNR-7, PNR-8, PNR-16, PNR-19, PNR-34-07, PNR-35-07, PNR-39-08). The majority of these wells sampled during the October 2012 event did not show a significant change in chloride or TDS concentrations when compared to data from the previous fall sampling event. The monitoring wells however, do indicate a substancial decrease in chloride and TDS concentrations since activation of the remediation system of 21 percent and 17 percent, respectively.

Exceptions to this are evident at wells PNR-19, PNR-34-07, and PNR 35-07 which exhibited increased chloride and TDS concentrations from the previous year.

4.1.3 Southern Boundary

Five monitoring wells (PNR-39-08, PNR-29, PNR-28, PNR-27, and PNR-33-06) are used to delineate the southernmost edge of the brine plume. Average chloride concentrations in the southern boundary wells showed no significant change since last year, but have decreased by 25 percent since activation of the remediation system. TDS concentrations in these wells follow the same trend and show no significant change since last year at this time, but a decrease of 17 percent in concentrations since the remediation system became operational. These values provide additional evidence that the plume is being effectively contained to the south.

4.1.4 BTEX Results

Of the monitoring wells analyzed for BTEX, only PNR-7 and PNR-20 had benzene levels detected above quantitation limits with concentrations of 32 µg/L and 17 µg/L respectively. These concentrations represent a decrease in PNR-7 and a slight increase in PNR-20. Benzene was detected at levels lower than the reporting limit but above detection limits in PNR-19, -23, and -24, these values are considered an estimate. Toluene was detected at 0.11 µg/L in PNR-7. In wells PNR-20 and -24, toluene was detected lower than reporting limit and above the detection limit, and are therefor considered an estimate. Ethylbenzene was detected in only one well, PNR-24, at a concentration of 11 µg/L, a value which has continued to decrease in this well. PNR-24 also had a total xylenes concentration of 5.1 µg/L.

4.2 Domestic Water Supply Wells

In accordance with the modified monitoring agreement, 4 domestic wells (M-27, M-28, M-31, and M-60) were also sampled in October 2012. These wells are no longer used for domestic supply purposes. Wells M-28 and M-31 are immediately downgradient of the Mesa-Biere 1-22 well location and are completed in the Biere upper terrace. Well M-28 is the closest domestic well to the contaminant source (the Mesa-Biere 1-22 production well) and continued to show improvement in water quality, with a chloride concentration of 1,440 mg/L. This value represents a 94 percent decrease from the peak measured concentration and a 82 percent decrease since activation of the remediation system. M-31, located just south and slightly west of M-28, also shows improvement since activation of the remediation system, with a chloride concentration of 31,100 mg/L, a decrease of 14 percent. Both domestic wells (M-28 and M-31) completed on

the Biere upper terrace have shown improvement and significant reduction in chloride concentrations since sampling first began in 2000, with an average decrease of 54 percent chlorides and 53 percent reduction in TDS.

Well M-27, upgradient from the Mesa-Biere 1-22 well, exhibited no significant change in chloride concentration since activation of the remediation system. The chloride concentration in this well is still increasing from the original value of 5,280 mg/L to 7,100 mg/L in October 2012.

Well M-60, located to the southwest of the production well in the lower Poplar River alluvial valley, shows an increased chloride concentration of 2,930 mg/L, a 35 percent change since the activation remediation system. The chloride concentration in this well has more than tripled since monitoring began in May 2000 and continues to rise.

Benzene was detected in only one of the three former domestic wells sampled, M-31, at a concentration of 26 micrograms per liter (µg/L). No toluene, ethylbenzene, or total xylenes were detected in any of the domestic wells sampled.

4.3 Brine Recovery Well Network

The Pioneer brine recovery well network is comprised of 12 recovery wells (PNR-RW-1, -2, -3, -4, -5, -6, -8, -9, -10, -11, -12, and -13) as shown in Figure 1. Recovery wells PNR-RW-9, -10, -11, and -13 are located near the Northern Tank Battery closest to the Mesa-Biere 1-22 well site. Wells PNR-RW-1,-2,-3,-4, and -5 are located just north of the Southern Tank Battery nearest the Class V Injection Well (SWD-1). The westernmost recovery wells are PNR-RW-6,-8, and -12.

In the brine recovery wells nearest the Mesa-Biere 1-22 well site (and Northern Tank Battery), the average chloride concentration was approximately 9,600 mg/L, with no significant change since last year at this time. The recovery wells closest to injection well SWD-1 and the Southern Tank Battery exhibited an average October 2012 chloride concentration of approximately 12,900 mg/L, and showed no significant difference from the previous year. In the westernmost recovery wells, the average chloride concentration was approximately 10,600 mg/L, a 33 percent decrease compared to last year. System wide, the recovery wells exhibited a 30 percent decrease in chloride concentrations since activation of the remedial system in 2008.

Benzene was not detected in three of the brine recovery wells (PNR-RW-6, PNR-RW-8, and PNR-RW-9). The remaining brine recovery wells exhibited decreasing benzene concentrations over time with values reported during the October 2012 sampling event

ranging from 0.38 (PNR-RW-12) to 16 µg/L (PNR-RW-10). Water quality information for the brine recovery wells is listed in Table 4.

5. SUMMARY AND CONCLUSIONS

The results of the semiannual monitoring conducted in October 2012 in accordance with EAOC #SWDA 08-2001-0027 and the U.S. EPA September 2011 modified sampling and analysis plan for the Mesa-Biere 1-22 well site provide evidence for the following conclusions:

- Subsurface conditions surrounding the Mesa-Biere 1-22 well site are characterized by the heterogeneous nature of the site geology.
- Depth to groundwater for October 2012 in the Biere upper terrace averaged approximately 42.76 feet bgs (2033.36 feet msl).
- Groundwater flow in the study area is to the south-southwest with an average hydraulic gradient of approximately 0.001.
- Water quality results indicate a 15 percent decrease in chloride concentrations in the area of the newest brine recovery well (PNR-RW-13) just west of the Northern Tank Battery. This area will continue to be monitored to evaluate remediation system efficiency and brine recovery to the north.
- Benzene concentrations (where encountered) continue to show a decreasing trend throughout the monitoring network except in monitoring well PNR-20 which will continue to be monitored closely in future sampling events.
- Chloride concentrations in monitoring wells closest to the Mesa-Biere 1-22 well site have decreased an average of 81 percent since system activation.
- Western and southern boundaries of the plume (as defined through the monitoring network) decreased by an average of 21 to 25 percent since the remediation system became operational. Contrary to previous years, several wells along the western boundary(PNR-19, PNR-34-07, and PNR 35-07) exhibited slight increases in chloride and TDS. Water quality trends in these wells will continue to be monitored closely during future sampling events.
- Current monitoring data indicate that the remediation system is effectively limiting plume migration to the south since activation of the system in 2008.

6. REFERENCES

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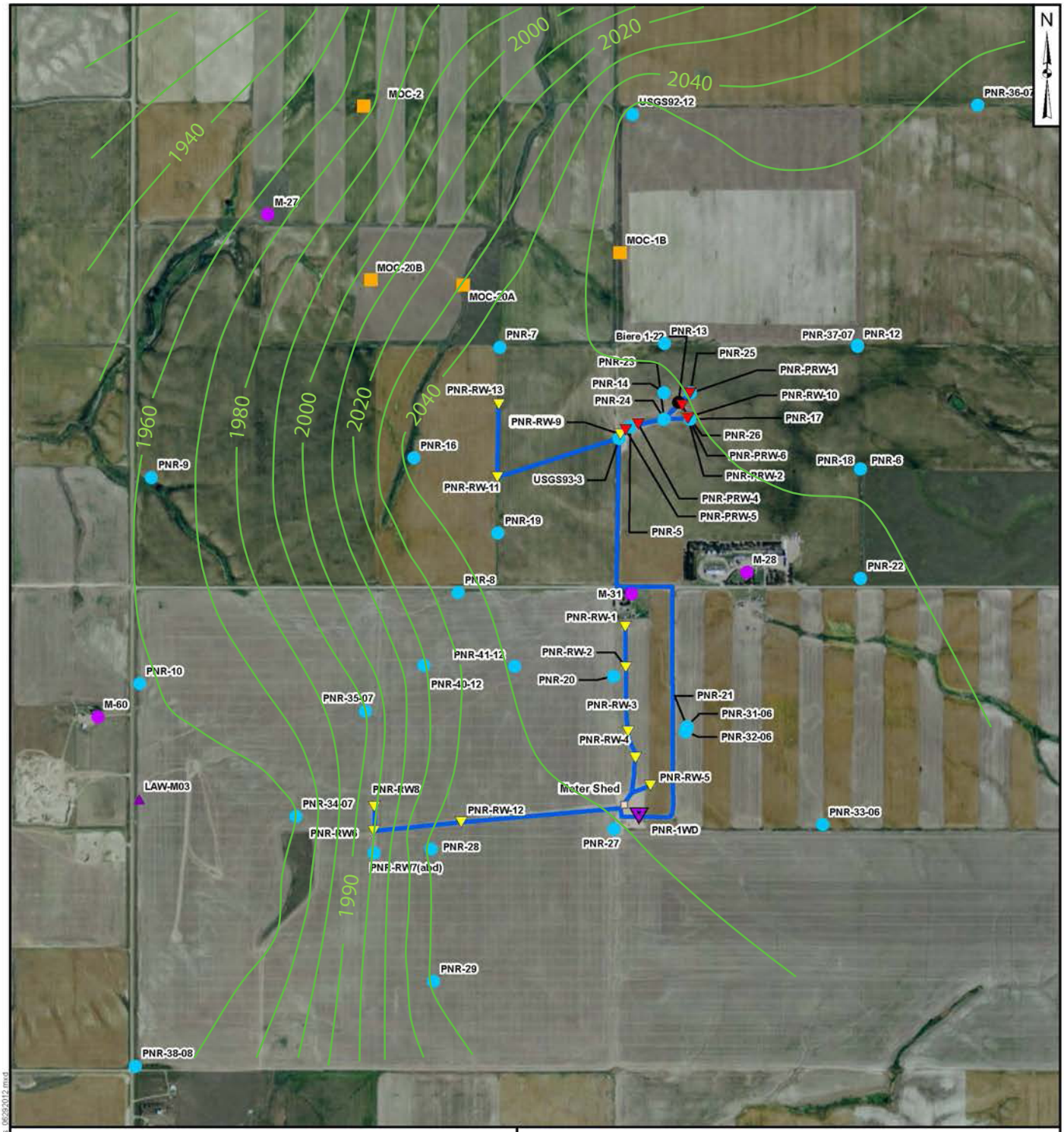
FIGURES



Legend

- Pioneer Monitoring Wells
- Pioneer Ground Water Recovery Wells
- Pioneer Product Recovery Wells
- Private Wells (Monitored by Pioneer)
- Land And Water Wells (LAW-MO3)
- Murphy Oil Company Wells
- Injection Wells
- Former Biere Wells (Producer, Relief & Injections)
- Meter Shed
- Flowlines

1,500 750 0 1,500 Feet

Well Location and Groundwater Elevation Map
Mesa-Biere 1-22 Groundwater Investigation

Poplar, Montana

Geosyntec consultants

Seattle, Washington | 11/30/2012

Figure 1

Path: P:\GIS\Projects\Pioneer Natural Resources\PNR0522-Poplar\Mapping\1-GWContours_06292012.mxd

TABLES

Table 1 - Depth to Water and LNAPL in Monitoring Wells and Domestic Wells
Pioneer Natural Resources USA, Inc. - Mesa Biere #1-22 Groundwater Investigation
Geosyntec Project No: PNR0522 Last Update: 11/27/2012 CT, Geosyntec

Well ID	Ground Surface Elev. (ft)	Measure Point Elev. (ft)	Gauging Date	Depth to LNAPL (ft bmp)	Depth to Water (ft bmp)	LNAPL Thickness (ft)	Groundwater Elev.[1] (ft)
LAW-M03	1986.45	1988.90	10/9/2012		30.76		1958.14
M-18	2047.10	2048.12	10/9/2012		80.24		1967.88
M-27	2029.92	2031.19	10/9/2012		66.91		1964.28
M-28	2102.82	2096.63	10/9/2012		48.48		2048.15
M-31	2085.00	2087.17	10/9/2012		41.01		2046.16
M-60	1980.41	1981.44	10/10/2012		23.29		1958.15
MOC-1B	2077.05	2079.51	10/9/2012		25.56		2053.95
MOC-2	2036.10	2038.91	10/9/2012		73.00		1965.91
MOC-3		2010.56	10/9/2012		49.18		1961.38
MOC-4		1966.63	10/9/2012		74.24		1892.39
MOC-20A		1991.89	10/9/2012		14.86		1977.03
MOC-20B		1926.46	10/9/2012		72.58		1853.88
PNR-5	2082.64	2085.56	10/9/2012		38.25		2047.31
PNR-6	2116.53	2119.07	10/12/2012		13.02		2106.05
PNR-7	2069.59	2072.22	10/9/2012		27.12		2045.10
PNR-8	2060.21	2062.99	10/9/2012		62.72		2000.27
PNR-9	2014.11	2017.26	10/9/2012		56.48		1960.78
PNR-10	2009.17	2011.69	10/9/2012		53.41		1958.28
PNR-12	2098.44	2101.23	10/9/2012		48.24		2052.99
PNR-13	2079.38	2081.12	10/9/2012		30.44		2050.68
PNR-14	2079.82	2082.11	10/9/2012		32.61		2049.50
PNR-16	2053.88	2056.80	10/9/2012		10.56		2046.24
PNR-17	2084.06	2086.14	10/9/2012	36.10	36.15	0.05	2050.03
PNR-18	2116.21	2118.16	10/9/2012		67.63		2050.53
PNR-19	2071.26	2073.23	10/9/2012		26.79		2046.44
PNR-20	2084.55	2087.16	10/9/2012		42.41		2044.75
PNR-21	2099.04	2101.59	10/9/2012		58.93		2042.66
PNR-22	2127.38	2129.43	10/9/2012		80.52		2048.91
PNR-23	2083.00	2085.27	10/9/2012		36.90		2048.37
PNR-24	2083.00	2085.68	10/9/2012		37.29		2048.39
PNR-25	2081.92	2084.03	10/9/2012	33.39	34.27	0.88	2050.38
PNR-26	2084.07	2086.15	10/9/2012	35.53	39.20	3.67	2049.52
PNR-27	2092.86	2095.30	10/9/2012		55.57		2039.73
PNR-28	2079.64	2078.44	10/9/2012		46.16		2032.28
PNR-29	2073.76	2072.64	10/9/2012		40.50		2032.14
PNR-31-06	2098.91	2100.98	10/9/2012		58.04		2042.94
PNR-33-06	2142.86	2144.53	10/9/2012		101.86		2042.67
PNR-34-07	2053.42	2052.14	10/9/2012		93.44		1958.70
PNR-35-07	2060.91	2059.75	10/9/2012		69.77		1989.98
PNR-36-07	2104.80	2107.00	10/9/2012		49.81		2057.19

Well ID	Ground Surface Elev. (ft)	Measure Point Elev. (ft)	Gauging Date	Depth to LNAPL (ft bmp)	Depth to Water (ft bmp)	LNAPL Thickness (ft)	Groundwater Elev.[1] (ft)
PNR-38-08	2038.21	2039.34	10/9/2012		86.40		1952.94
PNR-39-08	2052.80	2055.27	10/9/2012		97.68		1957.59
PNR-40-12	2072.29	2070.07	10/9/2012		15.26		2054.81
PNR-41-12	2075.16	2073.22	10/9/2012		32.46		2040.76
USGS92-12	2063.92	2065.92	10/9/2012		9.80		2056.12
USGS93-03	2082.10	2083.46	10/9/2012		36.72		2046.74

Notes:

[1] = Groundwater elevation corrected for LNAPL thickness; Corrected Depth to Water = Depth to Water - .7 x Accum. LNAPL.

All elevations are provided in feet above mean sea level (MSL).

Accronyms/Abbreviations: ft=feet, ft bmp = feet below measuring point, LNAPL= light non-aqueous phase liquid

Table 2 - Inorganic Water Chemistry Data

Pioneer Natural Resources USA, Inc. - Mesa Biere #1-22 Groundwater Investigation

Geosyntec Project No: PNR0522 Last Update: 11/26/2012 CT, Geosyntec

Well ID	Date	Field SC mS	Field Temp. °C	Field D.O. mg/l	Field pH S.U.	Chloride mg/l	Total Dissolved Solids @ 180°C mg/l
M-27	10/12/2012	18.5	9.5	0.75	7.75	7,100	11,700
M-28	10/11/2012	8.0	9.8	0.65	6.83	1,440	6,650
M-31	10/25/2012	71.9	9.3	0.27	6.41	31,100	48,400
M-60	10/10/2012	11.8	9.4	0.23	7.30	2,930	6,080
MOC-1B	10/11/2012	4.2	8.3	0.54	6.92	54	3,730
MOC-2	10/11/2012	19.7	10.1	0.32	6.80	7,140	12,500
MOC-3	10/12/2012	3.5	8.4	0.67	6.53	64	2,960
MOC-4	10/10/2012	11.6	10.4	0.26	7.35	2,500	5,140
MOC-20A	10/14/2012	5.7	8.0	1.19	6.53	140	5,370
MOC-20B	10/13/2012	4.6	8.4	0.52	6.41	213	3,950
PNR-5	10/10/2012	9.7	27.3	0.52	7.57	2,310	5,660
PNR-6	10/12/2012	3.6	8.3	1.69	6.63	30	2,900
PNR-7	10/25/2012	65.8	8.3	0.46	6.28	29,400	47,200
PNR-8	10/11/2012	9.5	11.1	3.80	7.03	2,640	5,820
PNR-9	10/10/2012	21.4	9.7	1.03	7.10	5,820	10,600
PNR-10	10/13/2012	7.3	9.6	0.14	6.86	1,750	5,060
PNR-12	10/11/2012	4.8	8.2	0.81	6.76	57	4,320
PNR-13	10/12/2012	3.4	8.1	0.91	6.57	179	3,370
PNR-14	10/10/2012	11.2	19.5	0.90	6.79	2,650	7,840
PNR-16	10/12/2012	5.0	8.0	1.57	6.75	19	4,550
PNR-18	10/12/2012	4.3	8.6	0.58	6.53	114	3,750
PNR-19	10/24/2012	8.7	8.9	2.83	6.58	2,160	5,470
PNR-20	10/25/2012	50.1	9.0	1.32	6.54	20,800	36,800
PNR-21	10/11/2012	24.0	9.8	0.86	6.60	8,920	15,900
PNR-22	10/13/2012	5.1	9.6	0.83	6.47	706	3,770
PNR-23	10/25/2012	7.8	33.2	2.40	7.74	1,360	4,820
PNR-24	10/25/2012	6.8	27.9	0.19	7.27	852	5,050
PNR-27	10/11/2012	26.5	9.4	1.29	6.53	10,400	21,300
PNR-28	10/11/2012	24.8	9.3	3.54	6.50	9,580	18,500
PNR-29	10/12/2012	5.5	8.2	1.10	6.36	93	4,840
PNR-33-06	10/12/2012	5.0	8.2	2.18	6.41	102	4,620
PNR-34-07	10/12/2012	39.8	10.0	0.33	6.49	15,800	26,200
PNR-35-07	10/13/2012	4.0	8.5	0.69	6.47	172	3,340
PNR-36-07	10/11/2012	2.9	7.8	0.68	6.75	51	2,510
PNR-38-08	10/11/2012	10.1	10.0	0.17	6.99	1,980	5,440
PNR-39-08	10/11/2012	23.7	9.9	2.10	6.51	9,530	18,500
PNR-40-12	10/13/2012	7.6	8.7	2.34	6.78	191	7,280
PNR-41-12	10/13/2012	3.1	8.7	0.62	6.89	220	2,330
USGS92-12	10/11/2012	3.2	7.8	0.86	7.06	3	2,840
USGS93-3	10/10/2012	14.9	17.8	0.37	7.45	4,470	9,030

Table 3 - BTEX and TPH Analytical Data

Pioneer Natural Resources USA, Inc. - Mesa-Biere #1-22 Groundwater Investigation

Geosyntec Project No: PNR0522 Last Update: 11/26/2012 - CT, Geosyntec

Well ID	Date	Benzene µg/l	Toluene µg/l	Ethylbenzene µg/l	Total Xylenes µg/l	Total Petroleum Hydrocarbons mg/l
M-28	10/11/2012	< 1.0	< 1.0	< 1.0	< 1.0	< 1
M-31	10/25/2012	26	< 1.0	< 1.0	< 1.0	< 1
M-60	10/10/2012	< 1.0	< 1.0	< 1.0	< 1.0	< 1
PNR-7	10/25/2012	32	0.11	< 1.0	< 1.0	< 1
PNR-19	10/24/2012	0.74 (J)	< 1.0	< 1.0	< 1.0	< 1
PNR-20	10/25/2012	17	0.25 (J)	< 1.0	< 1.0	4
PNR-21	10/11/2012	< 2.5	< 2.5	< 2.5	< 2.5	< 1
PNR-23	10/25/2012	0.24 (J)	< 1.0	< 1.0	< 1.0	< 1
PNR-24	10/25/2012	0.31 (J)	0.15 (J)	11	5.1	3

Notes:

< # = Analyte not detected, number shown is reporting limit

J = Estimated value. Present but less than the limit of quantitation.

- = No data/not measured

mnw = Meter failure, reading recorded in field notes but not used,

Table 4 - Brine Recovery Wells - Chloride and BTEX Analytical Data

Pioneer Natural Resources USA, Inc. - Mesa-Biere #1-22 Groundwater Investigation

Geosyntec Project No: PNR0522 Last Update: 11/26/2012- CT, Geosyntec

Well ID	Date	Field SC mS/cm	Field Temp. °C	Field pH S.U.	Chloride mg/l	Total Dissolved Solids @ 180°C mg/l	Benzene µg/l	Toluene µg/l	Ethylbenzene µg/l	Total Xylenes µg/l	Total Petroleum Hydrocarbons mg/l
PNR-RW-1	10/10/2012	37.9	10.2	6.79	16,400	24,800	6.8	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-2	10/10/2012	35.6	9.5	6.78	13,800	23,800	7.8	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-3	10/10/2012	44.9	10.3	6.70	18,300	31,200	8.1	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-4	10/10/2012	26.4	9.4	6.54	9,190	17,400	2.4	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-5	10/10/2012	20.0	9.4	6.80	6,790	13,200	1.8	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-6	10/10/2012	27.7	9.4	6.31	8,560	19,800	< 1.0	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-8	10/10/2012	26.6	8.9	6.00	9,600	19,400	< 1.0	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-9	10/10/2012	15.8	23.1	7.08	5,070	9,640	< 1.0	< 1.0	0.66 (J)	< 1.0	< 1
PNR-RW-10	10/10/2012	4.4	14.3	7.43	281	3,380	16.0	188	167	497	650
PNR-RW-11	10/10/2012	39.7	8.8	6.75	16,100	25,900	6.9	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-12	10/10/2012	34.6	9.2	6.31	13,600	24,700	0.38 (J)	< 1.0	< 1.0	< 1.0	< 1
PNR-RW-13	10/10/2012	40.7	9.0	6.59	16,900	26,200	6.7	< 1.0	< 1.0	< 1.0	< 1

Notes:

< # = Analyte not detected, number shown is reporting limit

J = Estimated value. Present but less than the limit of quantitation.

- = No data/not measured

mnw = Meter failure, reading recorded in field notes but not used,

Geosyntec consultants

APPENDIX A

Analytical Results

ANALYTICAL SUMMARY REPORT

October 25, 2012

Geosyntec Consultants
1201 3rd Ave Ste 330
Seattle, WA 98101-3065

Workorder No.: B12101198

Project Name: Biere 1-22 Well Site

Energy Laboratories Inc Billings MT received the following 32 samples for Geosyntec Consultants on 10/12/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B12101198-001	M-60	10/10/12 17:15	10/12/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX
B12101198-002	M-28	10/11/12 13:57	10/12/12	Aqueous	Same As Above
B12101198-003	M-28 Dup	10/11/12 13:57	10/12/12	Aqueous	Same As Above
B12101198-004	PRN-27	10/11/12 10:11	10/12/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101198-005	USGS92-12	10/11/12 11:39	10/12/12	Aqueous	Same As Above
B12101198-006	PNR-RW-1	10/10/12 12:45	10/12/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX
B12101198-007	PNR-RW-13	10/10/12 11:35	10/12/12	Aqueous	Same As Above
B12101198-008	PNR-RW-3	10/10/12 12:14	10/12/12	Aqueous	Same As Above
B12101198-009	PNR-9	10/10/12 15:02	10/12/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101198-010	PNR-9 Dup	10/10/12 15:02	10/12/12	Aqueous	Same As Above
B12101198-011	MOC-4	10/10/12 12:18	10/12/12	Aqueous	Same As Above
B12101198-012	PNR-21	10/11/12 11:50	10/12/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX
B12101198-013	PNR-RW-11	10/10/12 11:55	10/12/12	Aqueous	Same As Above
B12101198-014	PNR-RW-2	10/10/12 12:26	10/12/12	Aqueous	Same As Above
B12101198-015	PNR-8	10/11/12 9:54	10/12/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101198-016	PNR-5	10/10/12 15:19	10/12/12	Aqueous	Same As Above
B12101198-017	PNR-14	10/10/12 16:15	10/12/12	Aqueous	Same As Above
B12101198-018	PNR-RW4	10/10/12 10:58	10/12/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX

ANALYTICAL SUMMARY REPORT

B12101198-019	PNR-RW5	10/10/12 11:20	10/12/12	Aqueous	Same As Above
B12101198-020	PNR-RW12	10/10/12 10:38	10/12/12	Aqueous	Same As Above
B12101198-021	MOC-1B	10/11/12 13:14	10/12/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101198-022	PNR-36-07	10/11/12 14:10	10/12/12	Aqueous	Same As Above
B12101198-023	PNR-39-08	10/11/12 14:02	10/12/12	Aqueous	Same As Above
B12101198-024	PNR-RW-9	10/10/12 9:25	10/12/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX
B12101198-025	PNR-RW-8	10/10/12 8:55	10/12/12	Aqueous	Same As Above
B12101198-026	PNR-RW-6	10/10/12 9:20	10/12/12	Aqueous	Same As Above
B12101198-027	USGS-93-3	10/10/12 18:28	10/12/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101198-028	PNR-38-08	10/10/12 10:42	10/12/12	Aqueous	Same As Above
B12101198-029	PNR-28	10/11/12 12:39	10/12/12	Aqueous	Same As Above
B12101198-030	Trip Blank Lot 092112 B-TS SHP0259	10/10/12 11:35	10/12/12	Trip Blank	8260-Volatile Organic Compounds-BTEX
B12101198-031	Trip Blank Lot 092712 B-TS SHP0259	10/10/12 11:55	10/12/12	Trip Blank	Same As Above
B12101198-032	Trip Blank Lot 092812 B-TS SHP0259	10/10/12 8:55	10/12/12	Trip Blank	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Geosyntec Consultants
Project: Biere 1-22 Well Site
Sample Delivery Group: B12101198

Report Date: 10/25/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-001
Client Sample ID M-60

Report Date: 10/25/12
Collection Date: 10/10/12 17:15
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	6080	mg/L		10		A2540 C	10/12/12 15:55 / ksm
INORGANICS							
Chloride	2930	mg/L	D	10		E300.0	10/16/12 03:59 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 17:23 / nl
Surr: 1,2-Dichloroethane-d4	114	%REC		70-130		SW8260B	10/15/12 17:23 / nl
Surr: Dibromofluoromethane	118	%REC		77-126		SW8260B	10/15/12 17:23 / nl
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	10/15/12 17:23 / nl
Surr: Toluene-d8	108	%REC		79-122		SW8260B	10/15/12 17:23 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:17 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-002
Client Sample ID M-28

Report Date: 10/25/12
Collection Date: 10/11/12 13:57
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	6650	mg/L		10		A2540 C	10/12/12 15:55 / ksm
INORGANICS							
Chloride	1440	mg/L	D	10		E300.0	10/16/12 04:14 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 21:35 / nl
Surr: 1,2-Dichloroethane-d4	117	%REC		70-130		SW8260B	10/15/12 21:35 / nl
Surr: Dibromofluoromethane	119	%REC		77-126		SW8260B	10/15/12 21:35 / nl
Surr: p-Bromofluorobenzene	107	%REC		76-127		SW8260B	10/15/12 21:35 / nl
Surr: Toluene-d8	109	%REC		79-122		SW8260B	10/15/12 21:35 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:16 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-003
Client Sample ID M-28 Dup

Report Date: 10/25/12
Collection Date: 10/11/12 13:57
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	6120	mg/L		10		A2540 C	10/12/12 15:56 / ksm
INORGANICS							
Chloride	1330	mg/L	D	10		E300.0	10/16/12 04:29 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 22:03 / nl
Surr: 1,2-Dichloroethane-d4	115	%REC		70-130		SW8260B	10/15/12 22:03 / nl
Surr: Dibromofluoromethane	119	%REC		77-126		SW8260B	10/15/12 22:03 / nl
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	10/15/12 22:03 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/15/12 22:03 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:17 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-004
Client Sample ID PRN-27

Report Date: 10/25/12
Collection Date: 10/11/12 10:11
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	21300	mg/L		10		A2540 C	10/12/12 15:56 / ksm
INORGANICS							
Chloride	10400	mg/L	D	50		E300.0	10/16/12 04:44 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-005
Client Sample ID USGS92-12

Report Date: 10/25/12
Collection Date: 10/11/12 11:39
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	2840	mg/L		10		A2540 C	10/12/12 15:56 / ksm
INORGANICS							
Chloride	3	mg/L		1		E300.0	10/16/12 14:49 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-006
Client Sample ID PNR-RW-1

Report Date: 10/25/12
Collection Date: 10/10/12 12:45
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	24800	mg/L		10		A2540 C	10/12/12 15:56 / ksm
INORGANICS							
Chloride	16400	mg/L	D	50		E300.0	10/16/12 05:14 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	6.8	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 22:31 / nl
Surr: 1,2-Dichloroethane-d4	119	%REC		70-130		SW8260B	10/15/12 22:31 / nl
Surr: Dibromofluoromethane	120	%REC		77-126		SW8260B	10/15/12 22:31 / nl
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	10/15/12 22:31 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/15/12 22:31 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:27 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-007
Client Sample ID PNR-RW-13

Report Date: 10/25/12
Collection Date: 10/10/12 11:35
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	26200	mg/L		10		A2540 C	10/12/12 15:56 / ksm
INORGANICS							
Chloride	16900	mg/L	D	50		E300.0	10/16/12 15:34 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	6.7	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 22:59 / nl
Surr: 1,2-Dichloroethane-d4	125	%REC		70-130		SW8260B	10/15/12 22:59 / nl
Surr: Dibromofluoromethane	119	%REC		77-126		SW8260B	10/15/12 22:59 / nl
Surr: p-Bromofluorobenzene	110	%REC		76-127		SW8260B	10/15/12 22:59 / nl
Surr: Toluene-d8	107	%REC		79-122		SW8260B	10/15/12 22:59 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:26 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-008
Client Sample ID PNR-RW-3

Report Date: 10/25/12
Collection Date: 10/10/12 12:14
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	31200	mg/L		10		A2540 C	10/12/12 15:57 / ksm
INORGANICS							
Chloride	18300	mg/L	D	50		E300.0	10/16/12 16:20 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	8.1	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 23:27 / nl
Surr: 1,2-Dichloroethane-d4	115	%REC		70-130		SW8260B	10/15/12 23:27 / nl
Surr: Dibromofluoromethane	111	%REC		77-126		SW8260B	10/15/12 23:27 / nl
Surr: p-Bromofluorobenzene	111	%REC		76-127		SW8260B	10/15/12 23:27 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/15/12 23:27 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:23 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-009
Client Sample ID PNR-9

Report Date: 10/25/12
Collection Date: 10/10/12 15:02
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	10600	mg/L		10		A2540 C	10/12/12 15:57 / ksm
INORGANICS							
Chloride	5820	mg/L	D	20		E300.0	10/16/12 16:35 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-010
Client Sample ID PNR-9 Dup

Report Date: 10/25/12
Collection Date: 10/10/12 15:02
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	12200	mg/L		10		A2540 C	10/15/12 10:27 / ksm
INORGANICS							
Chloride	5850	mg/L	D	20		E300.0	10/16/12 16:50 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-011
Client Sample ID MOC-4

Report Date: 10/25/12
Collection Date: 10/10/12 12:18
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5140	mg/L		10		A2540 C	10/15/12 10:24 / ksm
INORGANICS							
Chloride	2500	mg/L	D	10		E300.0	10/16/12 17:07 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-012
Client Sample ID PNR-21

Report Date: 10/25/12
Collection Date: 10/11/12 11:50
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	15900	mg/L		10		A2540 C	10/15/12 10:24 / ksm
INORGANICS							
Chloride	8920	mg/L	D	20		E300.0	10/16/12 17:22 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
Ethylbenzene	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
Toluene	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
m+p-Xylenes	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
o-Xylene	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
Xylenes, Total	ND	ug/L		2.5		SW8260B	10/16/12 12:57 / nl
Surr: 1,2-Dichloroethane-d4	117	%REC		70-130		SW8260B	10/16/12 12:57 / nl
Surr: Dibromofluoromethane	119	%REC		77-126		SW8260B	10/16/12 12:57 / nl
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	10/16/12 12:57 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/16/12 12:57 / nl
- The reporting limit reflects a 5 times dilution. The sample was diluted due to foaming.							
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:27 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-013
Client Sample ID PNR-RW-11

Report Date: 10/25/12
Collection Date: 10/10/12 11:55
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	25900	mg/L		10		A2540 C	10/15/12 10:24 / ksm
INORGANICS							
Chloride	16100	mg/L	D	50		E300.0	10/16/12 17:37 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	6.9	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 15:43 / nl
Surr: 1,2-Dichloroethane-d4	124	%REC		70-130		SW8260B	10/16/12 15:43 / nl
Surr: Dibromofluoromethane	125	%REC		77-126		SW8260B	10/16/12 15:43 / nl
Surr: p-Bromofluorobenzene	109	%REC		76-127		SW8260B	10/16/12 15:43 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/16/12 15:43 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:20 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-014
Client Sample ID PNR-RW-2

Report Date: 10/25/12
Collection Date: 10/10/12 12:26
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	23800	mg/L		10		A2540 C	10/15/12 10:25 / ksm
INORGANICS							
Chloride	13800	mg/L	D	50		E300.0	10/16/12 17:52 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	7.8	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 15:15 / nl
Surr: 1,2-Dichloroethane-d4	125	%REC		70-130		SW8260B	10/16/12 15:15 / nl
Surr: Dibromofluoromethane	124	%REC		77-126		SW8260B	10/16/12 15:15 / nl
Surr: p-Bromofluorobenzene	110	%REC		76-127		SW8260B	10/16/12 15:15 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/16/12 15:15 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:28 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-015
Client Sample ID PNR-8

Report Date: 10/25/12
Collection Date: 10/11/12 09:54
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5820	mg/L		10		A2540 C	10/15/12 10:25 / ksm
INORGANICS							
Chloride	2640	mg/L	D	10		E300.0	10/16/12 18:08 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-016
Client Sample ID PNR-5

Report Date: 10/25/12
Collection Date: 10/10/12 15:19
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5660	mg/L		10		A2540 C	10/15/12 10:25 / ksm
INORGANICS							
Chloride	2310	mg/L	D	10		E300.0	10/16/12 18:23 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-017
Client Sample ID PNR-14

Report Date: 10/25/12
Collection Date: 10/10/12 16:15
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	7840	mg/L		10		A2540 C	10/15/12 10:26 / ksm
INORGANICS							
Chloride	2650	mg/L	D	10		E300.0	10/16/12 19:08 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-018
Client Sample ID PNR-RW4

Report Date: 10/25/12
Collection Date: 10/10/12 10:58
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	17400	mg/L		10		A2540 C	10/15/12 10:26 / ksm
INORGANICS							
Chloride	9190	mg/L	D	50		E300.0	10/16/12 19:53 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	2.4	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 14:48 / nl
Surr: 1,2-Dichloroethane-d4	126	%REC		70-130		SW8260B	10/16/12 14:48 / nl
Surr: Dibromofluoromethane	126	%REC		77-126		SW8260B	10/16/12 14:48 / nl
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	10/16/12 14:48 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/16/12 14:48 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:26 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-019
Client Sample ID PNR-RW5

Report Date: 10/25/12
Collection Date: 10/10/12 11:20
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	13200	mg/L		10		A2540 C	10/15/12 10:26 / ksm
INORGANICS							
Chloride	6790	mg/L	D	20		E300.0	10/16/12 20:08 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	1.8	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 14:20 / nl
Surr: 1,2-Dichloroethane-d4	122	%REC		70-130		SW8260B	10/16/12 14:20 / nl
Surr: Dibromofluoromethane	123	%REC		77-126		SW8260B	10/16/12 14:20 / nl
Surr: p-Bromofluorobenzene	109	%REC		76-127		SW8260B	10/16/12 14:20 / nl
Surr: Toluene-d8	107	%REC		79-122		SW8260B	10/16/12 14:20 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:23 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-020
Client Sample ID PNR-RW12

Report Date: 10/25/12
Collection Date: 10/10/12 10:38
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	24700	mg/L		10		A2540 C	10/15/12 10:26 / ksm
INORGANICS							
Chloride	13600	mg/L	D	50		E300.0	10/16/12 20:24 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.38	ug/L	J	1.0		SW8260B	10/16/12 13:52 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 13:52 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 13:52 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 13:52 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 13:52 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 13:52 / nl
Surr: 1,2-Dichloroethane-d4	124	%REC		70-130		SW8260B	10/16/12 13:52 / nl
Surr: Dibromofluoromethane	124	%REC		77-126		SW8260B	10/16/12 13:52 / nl
Surr: p-Bromofluorobenzene	112	%REC		76-127		SW8260B	10/16/12 13:52 / nl
Surr: Toluene-d8	104	%REC		79-122		SW8260B	10/16/12 13:52 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:12 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-021
Client Sample ID MOC-1B

Report Date: 10/25/12
Collection Date: 10/11/12 13:14
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3730	mg/L		10		A2540 C	10/15/12 10:27 / ksm
INORGANICS							
Chloride	54	mg/L	D	5		E300.0	10/16/12 20:39 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-022
Client Sample ID PNR-36-07

Report Date: 10/25/12
Collection Date: 10/11/12 14:10
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	2510	mg/L		10		A2540 C	10/15/12 10:23 / ksm
INORGANICS							
Chloride	51	mg/L	D	2		E300.0	10/16/12 20:54 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-023
Client Sample ID PNR-39-08

Report Date: 10/25/12
Collection Date: 10/11/12 14:02
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	18500	mg/L		10		A2540 C	10/15/12 10:28 / ksm
INORGANICS							
Chloride	9530	mg/L	D	20		E300.0	10/16/12 21:09 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-024
Client Sample ID PNR-RW-9

Report Date: 10/25/12
Collection Date: 10/10/12 09:25
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	9640	mg/L		10		A2540 C	10/15/12 10:28 / ksm
INORGANICS							
Chloride	5070	mg/L	D	20		E300.0	10/16/12 21:24 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/16/12 13:25 / nl
Ethylbenzene	0.66	ug/L	J	1.0		SW8260B	10/16/12 13:25 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 13:25 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 13:25 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 13:25 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 13:25 / nl
Surr: 1,2-Dichloroethane-d4	126	%REC		70-130		SW8260B	10/16/12 13:25 / nl
Surr: Dibromofluoromethane	126	%REC		77-126		SW8260B	10/16/12 13:25 / nl
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	10/16/12 13:25 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/16/12 13:25 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/22/12 16:31 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-025
Client Sample ID PNR-RW-8

Report Date: 10/25/12
Collection Date: 10/10/12 08:55
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	19400	mg/L		10		A2540 C	10/15/12 10:28 / ksm
INORGANICS							
Chloride	9600	mg/L	D	50		E300.0	10/16/12 21:39 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 11:33 / nl
Surr: 1,2-Dichloroethane-d4	122	%REC		70-130		SW8260B	10/16/12 11:33 / nl
Surr: Dibromofluoromethane	121	%REC		77-126		SW8260B	10/16/12 11:33 / nl
Surr: p-Bromofluorobenzene	109	%REC		76-127		SW8260B	10/16/12 11:33 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/16/12 11:33 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/24/12 14:53 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-026
Client Sample ID PNR-RW-6

Report Date: 10/25/12
Collection Date: 10/10/12 09:20
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	19800	mg/L		10		A2540 C	10/15/12 10:28 / ksm
INORGANICS							
Chloride	8560	mg/L	D	500		E300.0	10/17/12 16:37 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/16/12 11:05 / nl
Surr: 1,2-Dichloroethane-d4	123	%REC		70-130		SW8260B	10/16/12 11:05 / nl
Surr: Dibromofluoromethane	124	%REC		77-126		SW8260B	10/16/12 11:05 / nl
Surr: p-Bromofluorobenzene	109	%REC		76-127		SW8260B	10/16/12 11:05 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/16/12 11:05 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/24/12 13:04 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-027
Client Sample ID USGS-93-3

Report Date: 10/25/12
Collection Date: 10/10/12 18:28
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	9030	mg/L		10		A2540 C	10/15/12 10:29 / ksm
INORGANICS							
Chloride	4470	mg/L	D	20		E300.0	10/16/12 22:40 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-028
Client Sample ID PNR-38-08

Report Date: 10/25/12
Collection Date: 10/10/12 10:42
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5440	mg/L		10		A2540 C	10/15/12 10:29 / ksm
INORGANICS							
Chloride	1980	mg/L	D	10		E300.0	10/16/12 23:25 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-029
Client Sample ID PNR-28

Report Date: 10/25/12
Collection Date: 10/11/12 12:39
DateReceived: 10/12/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	18500	mg/L		10		A2540 C	10/15/12 10:34 / ksm
INORGANICS							
Chloride	9580	mg/L	D	20		E300.0	10/16/12 23:40 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-030
Client Sample ID Trip Blank Lot 092112 B-TS SHP0259

Report Date: 10/25/12
Collection Date: 10/10/12 11:35
DateReceived: 10/12/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 15:04 / nl
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	10/15/12 15:04 / nl
Surr: Dibromofluoromethane	116	%REC		77-126		SW8260B	10/15/12 15:04 / nl
Surr: p-Bromofluorobenzene	107	%REC		76-127		SW8260B	10/15/12 15:04 / nl
Surr: Toluene-d8	110	%REC		79-122		SW8260B	10/15/12 15:04 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-031
Client Sample ID Trip Blank Lot 092712 B-TS SHP0259

Report Date: 10/25/12
Collection Date: 10/10/12 11:55
DateReceived: 10/12/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 15:31 / nl
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	10/15/12 15:31 / nl
Surr: Dibromofluoromethane	118	%REC		77-126		SW8260B	10/15/12 15:31 / nl
Surr: p-Bromofluorobenzene	108	%REC		76-127		SW8260B	10/15/12 15:31 / nl
Surr: Toluene-d8	110	%REC		79-122		SW8260B	10/15/12 15:31 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101198-032
Client Sample ID Trip Blank Lot 092812 B-TS SHP0259

Report Date: 10/25/12
Collection Date: 10/10/12 08:55
DateReceived: 10/12/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/15/12 15:59 / nl
Surr: 1,2-Dichloroethane-d4	109	%REC		70-130		SW8260B	10/15/12 15:59 / nl
Surr: Dibromofluoromethane	116	%REC		77-126		SW8260B	10/15/12 15:59 / nl
Surr: p-Bromofluorobenzene	108	%REC		76-127		SW8260B	10/15/12 15:59 / nl
Surr: Toluene-d8	107	%REC		79-122		SW8260B	10/15/12 15:59 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121012A
Sample ID: MBLK2	Method Blank				Run: BAL #11_121012A				10/12/12 15:53
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10						
Sample ID: LCS2	Laboratory Control Sample				Run: BAL #11_121012A				10/12/12 15:53
Solids, Total Dissolved TDS @ 180 C	2030	mg/L	10	101	90	110			
Sample ID: B12101200-007A MS	Sample Matrix Spike				Run: BAL #11_121012A				10/12/12 15:53
Solids, Total Dissolved TDS @ 180 C	5180	mg/L	10	104	90	110			
Sample ID: B12101200-008A DUP	Sample Duplicate				Run: BAL #11_121012A				10/12/12 15:54
Solids, Total Dissolved TDS @ 180 C	2780	mg/L	10		90	110	0.1	5	
Sample ID: B12101198-005A DUP	Sample Duplicate				Run: BAL #11_121012A				10/12/12 15:56
Solids, Total Dissolved TDS @ 180 C	2830	mg/L	10		90	110	0.1	5	
Method: A2540 C									Batch: TDS121015A
Sample ID: MBLK1	Method Blank				Run: BAL #11_121015A				10/15/12 10:23
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	6						
Sample ID: LCS1	Laboratory Control Sample				Run: BAL #11_121015A				10/15/12 10:23
Solids, Total Dissolved TDS @ 180 C	2040	mg/L	10	102	90	110			
Sample ID: B12101198-022A MS	Sample Matrix Spike				Run: BAL #11_121015A				10/15/12 10:24
Solids, Total Dissolved TDS @ 180 C	4520	mg/L	10	100	90	110			
Sample ID: B12101198-011A DUP	Sample Duplicate				Run: BAL #11_121015A				10/15/12 10:24
Solids, Total Dissolved TDS @ 180 C	5280	mg/L	10		90	110	2.6	5	
Sample ID: B12101198-021A DUP	Sample Duplicate				Run: BAL #11_121015A				10/15/12 10:27
Solids, Total Dissolved TDS @ 180 C	3730	mg/L	10		90	110	0.0	5	
Sample ID: MBLK2	Method Blank				Run: BAL #11_121015A				10/15/12 10:30
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10						
Sample ID: LCS2	Laboratory Control Sample				Run: BAL #11_121015A				10/15/12 10:31
Solids, Total Dissolved TDS @ 180 C	2010	mg/L	10	100	90	110			
Sample ID: B12101200-003A MS	Sample Matrix Spike				Run: BAL #11_121015A				10/15/12 10:32
Solids, Total Dissolved TDS @ 180 C	4190	mg/L	10	109	90	110			
Sample ID: B12101200-001A DUP	Sample Duplicate				Run: BAL #11_121015A				10/15/12 10:32
Solids, Total Dissolved TDS @ 180 C	3400	mg/L	10		90	110	0.1	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1664A									Batch: G_TPH121022A
Sample ID: MBLK1210220000	Method Blank				Run: SUB-G198738				10/22/12 16:07
Total Petroleum Hydrocarbons	ND	mg/L	0.4						
Sample ID: LCS1210220000	Laboratory Control Sample				Run: SUB-G198738				10/22/12 16:08
Total Petroleum Hydrocarbons	16	mg/L	5.0	81	64	132			
Sample ID: LCSD1210220000	Laboratory Control Sample Duplicate				Run: SUB-G198738				10/22/12 16:09
Total Petroleum Hydrocarbons	16	mg/L	5.0	82	64	132	1.2	34	
Sample ID: G12100358-001AMS	Sample Matrix Spike				Run: SUB-G198738				10/22/12 16:11
Total Petroleum Hydrocarbons	18	mg/L	5.0	85	64	132			
Sample ID: B12101198-020B	Sample Matrix Spike				Run: SUB-G198738				10/22/12 16:13
Total Petroleum Hydrocarbons	18	mg/L	5.0	87	64	132			
Method: E1664A									Batch: G_TPH121024A
Sample ID: MBLK1210240000	Method Blank				Run: SUB-G198800				10/24/12 13:01
Total Petroleum Hydrocarbons	ND	mg/L	0.4						
Sample ID: LCS1210240000	Laboratory Control Sample				Run: SUB-G198800				10/24/12 13:02
Total Petroleum Hydrocarbons	16	mg/L	5.0	82	64	132			
Sample ID: LCSD1210240000	Laboratory Control Sample Duplicate				Run: SUB-G198800				10/24/12 13:03
Total Petroleum Hydrocarbons	15	mg/L	5.0	76	64	132	7.6	34	
Sample ID: G12100359-026BMS	Sample Matrix Spike				Run: SUB-G198800				10/24/12 13:05
Total Petroleum Hydrocarbons	17	mg/L	5.0	84	64	132			
Sample ID: G12100504-001EMS	Sample Matrix Spike				Run: SUB-G198800				10/24/12 13:07
Total Petroleum Hydrocarbons	17	mg/L	5.0	85	64	132			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**								Analytical Run: IC203-B_121015A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/15/12 18:55	
Chloride	24.0	mg/L	1.0	96	90	110			
Method: **E300.0**								Batch: R193453	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121015A			10/15/12 19:10	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121015A			10/15/12 19:25	
Chloride	23.5	mg/L	1.0	94	90	110			
Sample ID: **B12101181-004AMS**	Sample Matrix Spike				Run: IC203-B_121015A			10/16/12 02:43	
Chloride	25.0	mg/L	1.0	98	90	110			
Sample ID: **B12101181-004AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121015A			10/16/12 02:58	
Chloride	25.3	mg/L	1.0	99	90	110	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**								Analytical Run: IC203-B_121016A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/16/12 12:18	
Chloride	23.3	mg/L	1.0	93	90	110			
Method: **E300.0**								Batch: R193523	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121016A			10/16/12 12:33	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121016A			10/16/12 12:48	
Chloride	23.4	mg/L	1.0	94	90	110			
Sample ID: **B12101176-001AMS**	Sample Matrix Spike				Run: IC203-B_121016A			10/16/12 14:19	
Chloride	151	mg/L	1.3	100	90	110			
Sample ID: **B12101176-001AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121016A			10/16/12 14:34	
Chloride	155	mg/L	1.3	103	90	110	2.5	20	
Sample ID: **B12101198-007AMS**	Sample Matrix Spike				Run: IC203-B_121016A			10/16/12 15:49	
Chloride	22900	mg/L	53	120	90	110			S
Sample ID: **B12101198-007AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121016A			10/16/12 16:05	
Chloride	22800	mg/L	53	118	90	110	0.4	20	S
Sample ID: **B12101198-017AMS**	Sample Matrix Spike				Run: IC203-B_121016A			10/16/12 19:23	
Chloride	4130	mg/L	13	118	90	110			S
Sample ID: **B12101198-017AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121016A			10/16/12 19:38	
Chloride	4120	mg/L	13	118	90	110	0.1	20	S
Sample ID: **B12101198-027AMS**	Sample Matrix Spike				Run: IC203-B_121016A			10/16/12 22:55	
Chloride	7080	mg/L	26	104	90	110			
Sample ID: **B12101198-027AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121016A			10/16/12 23:10	
Chloride	6930	mg/L	26	98	90	110	2.2	20	

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**								Analytical Run: IC203-B_121017A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/17/12 12:48	
Chloride	22.9	mg/L	1.0	91	90	110			
Method: **E300.0**								Batch: R193598	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121017A			10/17/12 13:03	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121017A			10/17/12 13:18	
Chloride	23.1	mg/L	1.0	92	90	110			
Sample ID: **B12101526-001AMS**	Sample Matrix Spike				Run: IC203-B_121017A			10/17/12 19:38	
Chloride	2230	mg/L	13	109	90	110			
Sample ID: **B12101526-001AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121017A			10/17/12 19:53	
Chloride	2250	mg/L	13	110	90	110	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Analytical Run: R193404
Sample ID: CCV101512	Continuing Calibration Verification Standard								10/15/12 13:12
Benzene	5.84	ug/L	1.0	117	70	130			
Ethylbenzene	5.80	ug/L	1.0	116	80	120			
Toluene	5.96	ug/L	1.0	119	80	120			
m+p-Xylenes	11.5	ug/L	1.0	115	70	130			
o-Xylene	5.84	ug/L	1.0	117	70	130			
Xylenes, Total	17.4	ug/L	1.0		0	0			
Surr: 1,2-Dichloroethane-d4			1.0	110	70	130			
Surr: Dibromofluoromethane			1.0	116	77	126			
Surr: p-Bromofluorobenzene			1.0	102	76	127			
Surr: Toluene-d8			1.0	109	79	122			
Method: SW8260B									Batch: R193404
Sample ID: LCS101512	Laboratory Control Sample				Run: SV5972.I_121015A				10/15/12 13:40
Benzene	5.48	ug/L	1.0	110	71	133			
Ethylbenzene	5.52	ug/L	1.0	110	78	131			
Toluene	5.56	ug/L	1.0	111	78	134			
m+p-Xylenes	11.2	ug/L	1.0	112	78	133			
o-Xylene	5.52	ug/L	1.0	110	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	113	70	130			
Surr: Dibromofluoromethane			1.0	118	77	126			
Surr: p-Bromofluorobenzene			1.0	104	76	127			
Surr: Toluene-d8			1.0	110	79	122			
Sample ID: BLK101512	Method Blank				Run: SV5972.I_121015A				10/15/12 14:36
Benzene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Xylenes, Total	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			1.0	106	70	130			
Surr: Dibromofluoromethane			1.0	112	77	126			
Surr: p-Bromofluorobenzene			1.0	107	76	127			
Surr: Toluene-d8			1.0	111	79	122			
Sample ID: B12101198-001Cms	Sample Matrix Spike				Run: SV5972.I_121015A				10/15/12 20:39
Benzene	5.32	ug/L	1.0	106	71	133			
Ethylbenzene	5.36	ug/L	1.0	107	78	131			
Toluene	5.44	ug/L	1.0	109	78	134			
m+p-Xylenes	10.8	ug/L	1.0	108	78	133			
o-Xylene	5.56	ug/L	1.0	111	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	114	70	130			
Surr: Dibromofluoromethane			1.0	120	77	126			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: R193404
Sample ID: B12101198-001Cms	Sample Matrix Spike				Run: SV5972.I_121015A				10/15/12 20:39
Surr: p-Bromofluorobenzene			1.0	101	76	127			
Surr: Toluene-d8			1.0	106	79	122			
Sample ID: B12101198-001Cmsd	Sample Matrix Spike Duplicate				Run: SV5972.I_121015A				10/15/12 21:07
Benzene	5.40	ug/L	1.0	108	71	133	1.5	20	
Ethylbenzene	5.48	ug/L	1.0	110	78	131	2.2	20	
Toluene	5.52	ug/L	1.0	110	78	134	1.5	20	
m+p-Xylenes	10.8	ug/L	1.0	108	78	133	0.0	20	
o-Xylene	5.48	ug/L	1.0	110	79	136	1.4	20	
Surr: 1,2-Dichloroethane-d4			1.0	115	70	130			
Surr: Dibromofluoromethane			1.0	121	77	126			
Surr: p-Bromofluorobenzene			1.0	103	76	127			
Surr: Toluene-d8			1.0	106	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Analytical Run: R193449
Sample ID: CCV101612	Continuing Calibration Verification Standard								10/16/12 09:09
Benzene	4.96	ug/L	1.0	99	70	130			
Ethylbenzene	5.08	ug/L	1.0	102	80	120			
Toluene	5.00	ug/L	1.0	100	80	120			
m+p-Xylenes	10.3	ug/L	1.0	103	70	130			
o-Xylene	5.12	ug/L	1.0	102	70	130			
Xylenes, Total	15.4	ug/L	1.0		0	0			
Surr: 1,2-Dichloroethane-d4			1.0	117	70	130			
Surr: Dibromofluoromethane			1.0	120	77	126			
Surr: p-Bromofluorobenzene			1.0	102	76	127			
Surr: Toluene-d8			1.0	108	79	122			
Method: SW8260B									Batch: R193449
Sample ID: LCS101612	Laboratory Control Sample				Run: SV5972.I_121016A				10/16/12 09:42
Benzene	5.24	ug/L	1.0	105	71	133			
Ethylbenzene	5.40	ug/L	1.0	108	78	131			
Toluene	5.40	ug/L	1.0	108	78	134			
m+p-Xylenes	11.3	ug/L	1.0	113	78	133			
o-Xylene	5.48	ug/L	1.0	110	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	117	70	130			
Surr: Dibromofluoromethane			1.0	120	77	126			
Surr: p-Bromofluorobenzene			1.0	102	76	127			
Surr: Toluene-d8			1.0	107	79	122			
Sample ID: BLK101612	Method Blank				Run: SV5972.I_121016A				10/16/12 10:38
Benzene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Xylenes, Total	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			1.0	112	70	130			
Surr: Dibromofluoromethane			1.0	119	77	126			
Surr: p-Bromofluorobenzene			1.0	106	76	127			
Surr: Toluene-d8			1.0	108	79	122			
Sample ID: B12101198-026Cms	Sample Matrix Spike				Run: SV5972.I_121016A				10/16/12 12:01
Benzene	5.04	ug/L	1.0	101	71	133			
Ethylbenzene	4.84	ug/L	1.0	97	78	131			
Toluene	5.04	ug/L	1.0	101	78	134			
m+p-Xylenes	9.64	ug/L	1.0	96	78	133			
o-Xylene	5.04	ug/L	1.0	101	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	124	70	130			
Surr: Dibromofluoromethane			1.0	125	77	126			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/25/12
Project: Biere 1-22 Well Site
Work Order: B12101198

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: R193449
Sample ID: B12101198-026Cms	Sample Matrix Spike				Run: SV5972.I_121016A				10/16/12 12:01
Surr: p-Bromofluorobenzene			1.0	106	76	127			
Surr: Toluene-d8			1.0	105	79	122			
Sample ID: B12101198-026Cmsd	Sample Matrix Spike Duplicate				Run: SV5972.I_121016A				10/16/12 12:29
Benzene	5.12	ug/L	1.0	102	71	133	1.6	20	
Ethylbenzene	4.96	ug/L	1.0	99	78	131	2.4	20	
Toluene	5.16	ug/L	1.0	103	78	134	2.4	20	
m+p-Xylenes	9.80	ug/L	1.0	98	78	133	1.6	20	
o-Xylene	5.16	ug/L	1.0	103	79	136	2.4	20	
Surr: 1,2-Dichloroethane-d4			1.0	124	70	130			
Surr: Dibromofluoromethane			1.0	125	77	126			
Surr: p-Bromofluorobenzene			1.0	106	76	127			
Surr: Toluene-d8			1.0	105	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Geosyntec Consultants

B12101198

Login completed by: Randa Nees
Date Received: 10/12/2012
Reviewed by: BL2000\jklier
Received by: lg
Reviewed Date: 10/12/2012
Carrier name: Return-UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ On Ice		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Container/Temp Blank temperature for Cooler 1 was 2.1℃, Cooler 2 was 2.4℃, Cooler 3 was 4.7℃, Cooler 4 was 2.8℃ and Cooler 5 was 4.6℃.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC

Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

☑ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM

Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

☑ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Project Name, PWS, Permit, Etc.: BIERE 1-22 WELL SITE

Contact Name: CHRISTA TYRRELL Phone/Fax: 406-209-1905

Invoice Contact & Phone: LISA CURTIS 206-496-1450

Sample Origin: State: MT

EPA/State Compliance: Yes ☐ No ☐

Cell: —

Sampler: (Please Print) CM, MU, GW, KD, CT, SW

Purchase Order:

Quote/Bottle Order: 63125

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, Cl	BTEX, TPH	SEE ATTACHED
1 M-60	10/10/12	0715	6 W	✓	✓	
2 M-28	10/11/12	1357	6 W	✓	✓	
3 M-28 DUP	10/11/12	1357	6 W	✓	✓	
4 PNR-27	10/11/12	1011	1 W	✓		
5 USGS 92-12	10/11/12	1139	1 W	✓		
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: FEDEX GRD

Cooler ID(s):

Receipt Temp: 2.1 °C

On Ice: (Y) N

Custody Seal: On Bottle (Y) N; On Cooler (Y) N

Intact: (Y) N

Signature Match: (Y) N

LABORATORY USE ONLY: 1201198-001, 002, 003, 004, 005

Custody Record MUST be Signed

Relinquished by (print): C. TYRRELL Date/Time: 10/11/12 1502 Signature:

Relinquished by (print): Date/Time: Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by (print): EN ROUTE VIA UPS Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 10-12-12 9:15 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC

Project Name, PWS, Permit, Etc.: BIERE 1-22 WELL SITE

Sample Origin State: MT

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

Contact Name: CHRISTA TYRRELL Phone/Fax: 206-496-1450 Cell: 406-209-1905

Sampler: (Please Print) CT, SW, CM, MU GW, KD

☑ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM

Invoice Contact & Phone: LISA CURTIS 206-496-1450

Purchase Order: –

Quote/Bottle Order: 63125

Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

☑ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air S Soils/Solids V Vegetation B Bioassay O Other W Water D Drinking Water DW

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, CL	BTEX, TRH	SEE ATTACHED
1	PNR - RW-1	10/10/12	1245	6 W	✓	✓	
2	PNR - RW-13	10/10/12	1135	6 W	✓	✓	
3	PNR - RW-3	10/10/12	1214	6 W	✓	✓	
4	~~PNR - MB - 1-22~~	~~10/10/12~~	~~1502~~	~~1 W~~	~~✓~~		
5	~~PNR - MB - 1-22 DUP~~	~~10/10/12~~	~~1502~~	~~1 W~~	~~✓~~		
6	~~PNR - MB - 1-9~~						
7	PNR - 9	10/10/12	1502	1 W	✓		
8	PNR - 9 DUP	10/10/12	1502	1 W	✓		
9	MOC - 4	10/10/12	1218	1 W	✓		
10	TB 092112-B TSSHP02459						

Standard Turnaround (TAT) ➡ RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: RUSH UPS GRD

Cooler ID(s):

Receipt Temp 2.4 °C

On Ice: (Y) N

Custody Seal On Bottle Y (N) On Cooler Y (N)

Intact (Y) N

Signature Match (Y) N

LABORATORY USE ONLY: 1210198 = 006, 007, 008, –, –, –, 009, 010, 011, 030

Custody Record MUST be Signed

Relinquished by (print): C. TYRRELL Date/Time: 10/11/12 1507 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): EN ROUTE VIA UPS Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 10-12-12 9:15

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC	Project Name, PWS, Permit, Etc.: BIERE 1-22 WELL SITE	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101 ☑ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM	Contact Name: CHRISTA TYRRELL Phone/Fax: 206-496-1450 Cell: 406-209-1905		Sampler: (Please Print) CT, SW, CM, MU, KD, GW
Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101 ☑ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM	Invoice Contact & Phone: LISA CURTIS 206-496-1450	Purchase Order:	Quote/Bottle Order: 63125

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, Cl	BTEX, TPH	SEE ATTACHED	Standard Turnaround (TAT)	RUSH	Comments:	LABORATORY USE ONLY
1 PNR-21	10/11/12	1150	6 W	✓	✓					B12101198-012
2 PNR-RW-11	10/10/12	1155	6 W	✓	✓					013
3 PNR-RW-2	10/10/12	1226	6 W	✓	✓					014
4 PNR-8	10/11/12	0954	1 W	✓						015
5 PNR-5	10/10/12	1519	1 W	✓						016
6 PNR-14	10/10/12	1615	1 W	✓						017
7 TB 092712-B TSS#P0259										031
8										
9										
10										

➡ Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Shipped by: FEDEX GRD
Cooler ID(s):
Receipt Temp 4.7 °C TB
On Ice: (Y) N
Custody Seal On Bottle X (N) On Cooler (Y) N
Intact (Y) N
Signature Match (Y) N

Custody Record MUST be Signed

Relinquished by (print): C. TYRRELL	Date/Time: 10/11/12 1515	Signature:	Received by (print): ENROUTE VIA UPS	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: _____			**Received by Laboratory:**	Date/Time: 10-12-12 9:15	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC

Project Name, PWS, Permit, Etc.: BIERE 1-22 WELL SITE

Sample Origin State: MT

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

Contact Name: CHRISTA TYRRELL Phone/Fax: 206-496-1450 Cell: 406-209-1905

Sampler: (Please Print) CM, MU, GW, KD, CT, SW

☒ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM

Invoice Contact & Phone: LISA CURTIS 206-496-1450

Purchase Order:

Quote/Bottle Order: 63125

Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

☒ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS / Chloride	BTEX TPH	SEE ATTACHED	
1 PNR - RW 4	10/10/12	1058	6 W	✓	✓		
2 PNR - RW 5	10/10/12	1120	6 W	✓	✓		
3 PNR - RW 12	10/10/12	1038	6 W	✓	✓		
4 MOC - 1B	10/11/12	1314	1 W	✓			
5 PNR - 36-07	10/11/12	1410	1 W	✓			
6 PNR - 39-08	10/11/12	1402	1 W	✓			
7							
8							
9							
10							

Standard Turnaround (TAT) — RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed Ex Ground

Cooler ID(s):

Receipt Temp: 2.8 °C TB

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY: B12101198-018, 019, 020, 021, 022, 023, 024

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
C TYRRELL	10/11/12 1505		EN ROUTE VIA UPS		

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by Laboratory: Date/Time: 10-12-12 9:15 Signature: Lisa Garcia

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

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Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC

Project Name, PWS, Permit, Etc.: BIERE 1-22 WELLSITE

Sample Origin State: MT

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

Contact Name: CHRISTA TYRRELL Phone/Fax: 206-496-1450 Cell: 206-209-1905

Sampler: (Please Print) CM, MH, GW, KD CT, SW

☒ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM

Invoice Contact & Phone: LISA CURTIS 206-496-1450

Purchase Order:

Quote/Bottle Order: 63125

Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101

☒ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, CL	BTEX, TPH	SEE ATTACHED
1 PNR - RW-9	10/10/12	0925	6 W	✓	✓	
2 PNR - RW-8	10/10/12	0855	6 W	✓	✓	
3 PNR - RW-6	10/10/12	0920	6 W	✓	✓	
4 USGS - 93-3	10/10/12	1528	1 W	✓		
5 PNR - 38-08	10/10/12	1072	1 W	✓		
6 PNR - 28	10/11/12	1239	1 W	✓		
7 TB 092812-B TSS#P0259						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Ryan UPS

Cooler ID(s):

Receipt Temp 4.6 °C TB

On Ice: (Y) N

Custody Seal On Bottle Y N On Cooler Y N

Intact (Y) N

Signature Match (Y) N

LABORATORY USE ONLY

1210198-024
025
026
027
028
029
032

Custody Record MUST be Signed

Relinquished by (print): CHRISTA TYRRELL Date/Time: 10/11/12 1504 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): EN ROUTE UPS Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 10-12-12 9:15 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

ANALYTICAL SUMMARY REPORT

October 23, 2012

Geosyntec Consultants
1201 3rd Ave Ste 330
Seattle, WA 98101-3065

Workorder No.: B12101346

Project Name: Biere 1-22 Well Site

Energy Laboratories Inc Billings MT received the following 21 samples for Geosyntec Consultants on 10/15/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B12101346-007	MOC-20A	10/14/12 9:52	10/15/12	Aqueous	Anions by Ion Chromatography Solids, Total Dissolved
B12101346-008	PNR-33-06	10/12/12 15:02	10/15/12	Aqueous	Same As Above
B12101346-009	PNR-29	10/12/12 13:11	10/15/12	Aqueous	Same As Above
B12101346-010	M-27	10/12/12 9:17	10/15/12	Aqueous	Same As Above
B12101346-011	PNR-41-12	10/13/12 12:40	10/15/12	Aqueous	Same As Above
B12101346-012	PNR-34-07	10/12/12 11:16	10/15/12	Aqueous	Same As Above
B12101346-013	PNR-40-12	10/13/12 11:02	10/15/12	Aqueous	Same As Above
B12101346-014	MOC-3 Dup	10/12/12 11:44	10/15/12	Aqueous	Same As Above
B12101346-015	PNR-13	10/13/12 9:34	10/15/12	Aqueous	Same As Above
B12101346-016	MOC-3	10/12/12 11:44	10/15/12	Aqueous	Same As Above
B12101346-017	PNR-34-07 Dup	10/12/12 11:16	10/15/12	Aqueous	Same As Above
B12101346-018	PNR-35-07 Dup	10/13/12 10:45	10/15/12	Aqueous	Same As Above
B12101346-019	MOC-2	10/11/12 11:22	10/15/12	Aqueous	Same As Above
B12101346-020	MOC-20B	10/13/12 12:27	10/15/12	Aqueous	Same As Above
B12101346-024	PNR-22	10/13/12 13:45	10/15/12	Aqueous	Same As Above
B12101346-025	PNR-12	10/11/12 17:38	10/15/12	Aqueous	Same As Above
B12101346-026	PNR-10	10/13/12 13:46	10/15/12	Aqueous	Same As Above
B12101346-027	PNR-6	10/12/12 10:17	10/15/12	Aqueous	Same As Above
B12101346-028	PNR-35-07	10/13/12 10:45	10/15/12	Aqueous	Same As Above
B12101346-029	PNR-18	10/12/12 16:28	10/15/12	Aqueous	Same As Above
B12101346-030	PNR-16	10/12/12 9:00	10/15/12	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Geosyntec Consultants
Project: Biere 1-22 Well Site
Sample Delivery Group: B12101346

Report Date: 10/23/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-007
Client Sample ID MOC-20A

Report Date: 10/23/12
Collection Date: 10/14/12 09:52
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5370	mg/L		10		A2540 C	10/16/12 10:10 / ksm
INORGANICS							
Chloride	140	mg/L	D	5		E300.0	10/17/12 22:39 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-008
Client Sample ID PNR-33-06

Report Date: 10/23/12
Collection Date: 10/12/12 15:02
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	4620	mg/L		10		A2540 C	10/16/12 14:32 / ksm
INORGANICS							
Chloride	102	mg/L	D	5		E300.0	10/17/12 22:54 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-009
Client Sample ID PNR-29

Report Date: 10/23/12
Collection Date: 10/12/12 13:11
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	4840	mg/L		10		A2540 C	10/17/12 09:57 / ksm
INORGANICS							
Chloride	93	mg/L	D	5		E300.0	10/17/12 23:09 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-010
Client Sample ID M-27

Report Date: 10/23/12
Collection Date: 10/12/12 09:17
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	11700	mg/L		10		A2540 C	10/16/12 10:16 / ksm
INORGANICS							
Chloride	7100	mg/L	D	20		E300.0	10/17/12 23:25 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-011
Client Sample ID PNR-41-12

Report Date: 10/23/12
Collection Date: 10/13/12 12:40
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	2330	mg/L		10		A2540 C	10/16/12 10:13 / ksm
INORGANICS							
Chloride	220	mg/L	D	2		E300.0	10/18/12 00:10 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-012
Client Sample ID PNR-34-07

Report Date: 10/23/12
Collection Date: 10/12/12 11:16
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	26200	mg/L		10		A2540 C	10/16/12 10:13 / ksm
INORGANICS							
Chloride	15800	mg/L	D	50		E300.0	10/18/12 00:55 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-013
Client Sample ID PNR-40-12

Report Date: 10/23/12
Collection Date: 10/13/12 11:02
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	7280	mg/L		10		A2540 C	10/16/12 10:13 / ksm
INORGANICS							
Chloride	191	mg/L	D	10		E300.0	10/18/12 01:10 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-014
Client Sample ID MOC-3 Dup

Report Date: 10/23/12
Collection Date: 10/12/12 11:44
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3110	mg/L		10		A2540 C	10/16/12 10:14 / ksm
INORGANICS							
Chloride	62	mg/L	D	2		E300.0	10/18/12 01:25 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-015
Client Sample ID PNR-13

Report Date: 10/23/12
Collection Date: 10/13/12 09:34
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3370	mg/L		10		A2540 C	10/16/12 10:14 / ksm
INORGANICS							
Chloride	179	mg/L	D	5		E300.0	10/18/12 01:41 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-016
Client Sample ID MOC-3

Report Date: 10/23/12
Collection Date: 10/12/12 11:44
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	2960	mg/L		10		A2540 C	10/16/12 10:14 / ksm
INORGANICS							
Chloride	64	mg/L	D	2		E300.0	10/18/12 01:56 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-017
Client Sample ID PNR-34-07 Dup

Report Date: 10/23/12
Collection Date: 10/12/12 11:16
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	26400	mg/L		10		A2540 C	10/16/12 10:15 / ksm
INORGANICS							
Chloride	14800	mg/L	D	50		E300.0	10/18/12 02:11 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-018
Client Sample ID PNR-35-07 Dup

Report Date: 10/23/12
Collection Date: 10/13/12 10:45
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3370	mg/L		10		A2540 C	10/16/12 10:15 / ksm
INORGANICS							
Chloride	193	mg/L	D	5		E300.0	10/18/12 02:26 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-019
Client Sample ID MOC-2

Report Date: 10/23/12
Collection Date: 10/11/12 11:22
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	12500	mg/L		10		A2540 C	10/16/12 10:13 / ksm
INORGANICS							
Chloride	7140	mg/L	D	20		E300.0	10/18/12 02:41 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-020
Client Sample ID MOC-20B

Report Date: 10/23/12
Collection Date: 10/13/12 12:27
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3950	mg/L		10		A2540 C	10/16/12 10:15 / ksm
INORGANICS							
Chloride	213	mg/L	D	5		E300.0	10/18/12 02:56 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-024
Client Sample ID PNR-22

Report Date: 10/23/12
Collection Date: 10/13/12 13:45
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3770	mg/L		10		A2540 C	10/17/12 09:58 / ksm
INORGANICS							
Chloride	706	mg/L	D	5		E300.0	10/18/12 04:57 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-025
Client Sample ID PNR-12

Report Date: 10/23/12
Collection Date: 10/11/12 17:38
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	4320	mg/L		10		A2540 C	10/16/12 10:13 / ksm
INORGANICS							
Chloride	57	mg/L	D	5		E300.0	10/18/12 05:12 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-026
Client Sample ID PNR-10

Report Date: 10/23/12
Collection Date: 10/13/12 13:46
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5060	mg/L		10		A2540 C	10/17/12 09:58 / ksm
INORGANICS							
Chloride	1750	mg/L	D	5		E300.0	10/18/12 05:27 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-027
Client Sample ID PNR-6

Report Date: 10/23/12
Collection Date: 10/12/12 10:17
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	2900	mg/L		10		A2540 C	10/16/12 10:17 / ksm
INORGANICS							
Chloride	30	mg/L	D	2		E300.0	10/18/12 05:42 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-028
Client Sample ID PNR-35-07

Report Date: 10/23/12
Collection Date: 10/13/12 10:45
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3340	mg/L		10		A2540 C	10/17/12 09:58 / ksm
INORGANICS							
Chloride	172	mg/L	D	5		E300.0	10/18/12 05:57 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-029
Client Sample ID PNR-18

Report Date: 10/23/12
Collection Date: 10/12/12 16:28
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3750	mg/L		10		A2540 C	10/17/12 09:58 / ksm
INORGANICS							
Chloride	114	mg/L	D	5		E300.0	10/18/12 06:13 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12101346-030
Client Sample ID PNR-16

Report Date: 10/23/12
Collection Date: 10/12/12 09:00
DateReceived: 10/15/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	4550	mg/L		10		A2540 C	10/17/12 09:58 / ksm
INORGANICS							
Chloride	19	mg/L	D	5		E300.0	10/18/12 06:28 / jrs

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/23/12
Project: Biere 1-22 Well Site
Work Order: B12101346

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121016A
Sample ID: LCS3	Laboratory Control Sample				Run: BAL #11_121016A				10/16/12 10:12
Solids, Total Dissolved TDS @ 180 C	2010	mg/L	10	100	90	110			
Sample ID: B12101414-003A MS	Sample Matrix Spike				Run: BAL #11_121016A				10/16/12 10:12
Solids, Total Dissolved TDS @ 180 C	2420	mg/L	10	102	90	110			
Sample ID: B12101346-019A DUP	Sample Duplicate				Run: BAL #11_121016A				10/16/12 10:13
Solids, Total Dissolved TDS @ 180 C	12500	mg/L	10		90	110	0.0	5	
Sample ID: B12101346-020A DUP	Sample Duplicate				Run: BAL #11_121016A				10/16/12 10:15
Solids, Total Dissolved TDS @ 180 C	3940	mg/L	10		90	110	0.1	5	
Method: A2540 C									Batch: TDS121017A
Sample ID: MBLK1	Method Blank				Run: BAL #11_121017A				10/17/12 09:55
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	6						
Sample ID: LCS1	Laboratory Control Sample				Run: BAL #11_121017A				10/17/12 09:57
Solids, Total Dissolved TDS @ 180 C	2040	mg/L	10	102	90	110			
Sample ID: B12100224-004A MS	Sample Matrix Spike				Run: BAL #11_121017A				10/17/12 09:57
Solids, Total Dissolved TDS @ 180 C	2590	mg/L	10	102	90	110			
Sample ID: B12101346-009A DUP	Sample Duplicate				Run: BAL #11_121017A				10/17/12 09:58
Solids, Total Dissolved TDS @ 180 C	4830	mg/L	10		90	110	0.1	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/23/12
Project: Biere 1-22 Well Site
Work Order: B12101346

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**								Analytical Run: IC203-B_121017A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/17/12 12:48	
Chloride	22.9	mg/L	1.0	91	90	110			
Method: **E300.0**								Batch: R193598	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121017A			10/17/12 13:03	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121017A			10/17/12 13:18	
Chloride	23.1	mg/L	1.0	92	90	110			
Sample ID: **B12101346-001AMS**	Sample Matrix Spike				Run: IC203-B_121017A			10/17/12 20:53	
Chloride	3830	mg/L	13	109	90	110			
Sample ID: **B12101346-001AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121017A			10/17/12 21:09	
Chloride	3810	mg/L	13	108	90	110	0.4	20	
Sample ID: **B12101346-011AMS**	Sample Matrix Spike				Run: IC203-B_121017A			10/18/12 00:25	
Chloride	492	mg/L	2.6	109	90	110			
Sample ID: **B12101346-011AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121017A			10/18/12 00:40	
Chloride	491	mg/L	2.6	108	90	110	0.3	20	
Sample ID: **B12101346-021AMS**	Sample Matrix Spike				Run: IC203-B_121017A			10/18/12 03:57	
Chloride	35500	mg/L	53		90	110			A
Sample ID: **B12101346-021AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121017A			10/18/12 04:12	
Chloride	35500	mg/L	53		90	110	0.3	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Geosyntec Consultants

B12101346

Login completed by: Randa Nees
Date Received: 10/15/2012
Reviewed by: BL2000\kmcdonald
Received by: jrz
Reviewed Date: 10/16/2012
Carrier name: Courier

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Container/Temp Blank temperature for Cooler 1 was 9.4℃, Cooler 2 was 8.4℃, Cooler 3 was 11.2℃, and Cooler 4 was 10.1℃.

Cancelled samples 001 thru 006 and 021 thru 023 as requested by Christa Tyrrell on 10/22/12.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC	Project Name, PWS, Permit, Etc.: BIERE 1-22 WELL SITE	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101	Contact Name: CHRISTA TYRRELL Phone/Fax: 206-496-1450	Cell: 406-209-9165	Sampler: (Please Print) CT, SW, CM, MH, GW, KD
☑ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM	Invoice Contact & Phone: LISA CURTIS 206-496-1450	Purchase Order: -	Quote/Bottle Order: 63125
Invoice Address (Required): 1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101			
☑ No Hard Copy Email: LCURTIS@GEOSYNTEC.COM			

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other DW - Drinking Water

ANALYSIS REQUESTED

Standard Turnaround (TAT) — RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: TB
COOLER 1 — 9.4
COOLER 2 TB 8.4
COOLER 3 TB 11.2
COOLER 4 TB 10.1

Shipped by: COURIER
Cooler ID(s):
Receipt Temp: SEE ATTACHMENTS
On Ice: (Y) N
Custody Seal: On Bottle Y (N) On Cooler (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, Cl	BTEX, TPH	SEE ATTACHED		LABORATORY USE ONLY
3	1 PNR-19	10/11/12	1723	W 6	✓	✓			L2101346-001
3	2 M-31	10/12/12	1416	W 6	✓	✓			002
3	3 PNR-20	10/12/12	1218	W 6	✓	✓			003
3	4 PNR-RW-10	10/12/12	1557	W 6	✓	✓			004
4	5 PNR-RW-10 DUP	10/12/12	1557	W 6	✓	✓			005
4	6 PNR-20-DUP	10/12/12	1218	W 6	✓	✓			006
4	7 MOC-20A	10/14/12	0952	W 1	✓				007
4	8 PNR-33-06	10/12/12	1502	W 1	✓				008
4	9 PNR-29	10/12/12	1311	W 1	✓				009
4	10 M-27	10/12/12	0917	W 1	✓				010

Custody Record MUST be Signed

Relinquished by (print): C. TYRRELL Date/Time: 10/15/12 1525 Signature:
Relinquished by (print): Date/Time: Signature:

Received by (print): ~~EN ROUTE VIA UPS~~ Date/Time: Signature: Matt Hall
Received by (print): Date/Time: Signature:

Received by Laboratory: JR Zimmer Date/Time: 10/15/12 1500 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

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Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
GEOSYNTEC	BIERE 1-22 WELL SITE	State: MT	Yes ☐ No ☐

Report Mail Address (Required):	Contact Name:	Phone/Fax:	Cell:	Sampler: (Please Print)
1201 THIRD AVE, SUITE 330 SEATTLE, WA 98101	CHRISTA TYRRELL	206-496-1450	406-209-1905	CT, SW, CM, MH, GTW, KD
☑ No Hard Copy Email: CTYRRELL@GEOSYNTEC.COM	Invoice Contact & Phone: LISA CURTIS 206-496-1450	Purchase Order:		Quote/Bottle Order: 63125

Invoice Address (Required):

☐ No Hard Copy Email: _____

Special Report/Formats:

☐ DW ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other DW - Drinking Water

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, CL	BTEX, TPH	SEE ATTACHED	Standard Turnaround (TAT)	RUSH	LABORATORY USE ONLY
4	1 PNR-41-12	10/13/12	1240	W 1	✓					1210346-011
4	2 PNR-3407	10/12/12	1116	W 1	✓					012
4	3 PNR-40-12	10/13/12	1102	W 1	✓					013
1	4 MOC-3 DUP	10/12/12	1144	W 1	✓					014
1	5 PNR-13	10/13/12	0934	W 1	✓					015
1	6 MOC-3	10/12/12	1144	W 1	✓					016
1	7 PNR-3407 DUP	10/12/12	1116	W 1	✓					017
1	8 PNR-35-07 DUP	10/13/12	1045	W 1	✓					018
1	9 MOC-2	10/11/12	1122	W 1	✓					019
1	10 MOC-20B	10/13/12	1227	W 1	✓					020

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: COURIER
Cooler ID(s):
Receipt Temp: P.1 SEE COMMENTS C
On Ice: (Y) N
Custody Seal: On Bottle Y (N) / On Cooler (Y) N
Intact: (Y) N
Signature Match: (Y) N

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	Matt Usurelle	10/15/12 1500				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory: JEZOEMER	Date/Time: 10/15/12 1500	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

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Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Geosyntec	Project Name, PWS, Permit, Etc.: Biere 1-22 Well Site	Sample Origin State:	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1201 Third Ave, Suite 330 Seattle, WA 98101	Contact Name: Christa Tyrrell Phone/Fax: 206-496-1450	Cell: 406-209-1905	Sampler: (Please Print) CT, SW, CM, MU, GW, KD
☑ No Hard Copy Email: CTYRRELL@Geosyntec.com	Invoice Contact & Phone: Lisa Curtis 206-496-1450	Purchase Order:	Quote/Bottle Order: 63125

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State: ____
- ☐ Other: ____
- ☐ EDD/EDT (Electronic Data) Format: ____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers / Sample Type: A W S V B O DW (Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water)

ANALYSIS REQUESTED — SEE ATTACHED

Standard Turnaround (TAT) / RUSH — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, CL	BTEX, TPH	LABORATORY USE ONLY
1	PNR-7	10/12/12	1523	W 6	✓	✓	B12101346-021
2	PNR-23	10/12/12	1000	W 6	✓	✓	022
3	PNR-24	10/12/12	1037	W 6	✓	✓	023
4	PNR-22	10/13/12	1345	W 1	✓		024
5	PNR-12	10/11/12	1738	W 1	✓		025
6	PNR-10	10/13/12	1346	W 1	✓		026
7	PNR-6	10/12/12	1017	W 1	✓		027
8	PNR-35-07	10/13/12	1045	W 1	✓		028
9	PNR-18	10/12/12	1628	W 1	✓		029
10	PNR-16	10/12/12	0900	W 1	✓		030

2

LABORATORY USE ONLY:
- Shipped by: Courier
- Cooler ID(s):
- Receipt Temp: P.1 See Comments °C
- On Ice: (Y) N
- Custody Seal On Bottle: Y (N)
- On Cooler: (Y) N
- Intact: (Y) N
- Signature Match: (Y) N

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
Matt Usuriello	10/15/12 1500	[signature]			
			Received by Laboratory: JRZOEMER	10/15/12 1500	[signature]

Sample Disposal: Return to Client: ____ Lab Disposal: ____

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ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

Page _____ of _____

PLEASE PRINT (Provide as much information as possible.)

Company Name: GEOSYNTEC

Project Name, PWS, Permit, Etc.: TRIP BLANKS

Sample Origin State:

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address (Required):

Contact Name: Phone/Fax: Cell:

Sampler: (Please Print)

❑ No Hard Copy Email:

Invoice Contact & Phone:

Purchase Order:

Quote/Bottle Order:

Invoice Address (Required):

❑ No Hard Copy Email:

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

ANALYSIS REQUESTED

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

SEE ATTACHED

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: COC originated in lab.

Shipped by:

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Y N

Custody Seal On Bottle Y N On Cooler Y N

Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX												
1	TB 1092712TSSHP0259 — NO VOAS WITH THIS TB											10/12	@1116			1210346-031
2	TB 2092712TSSHP0259	10/11/12	@ ~~1736~~ 1122													032
3	TB 3092112TSSHP0259	10/11/12	@1723													033
4	TB 4092712TSSHP0259	10/12/12	@0917													034
5																
6																
7																
8																
9																
10																

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: _____			Received by Laboratory: JR ZOEMER	Date/Time: 10/15/12 1500	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

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ANALYTICAL SUMMARY REPORT

November 01, 2012

Geosyntec Consultants
1201 3rd Ave Ste 330
Seattle, WA 98101-3065

Workorder No.: B12102389

Project Name: Biere 1-22 Well Site

Energy Laboratories Inc Billings MT received the following 13 samples for Geosyntec Consultants on 10/26/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B12102389-001	PNR-19	10/24/12 17:23	10/26/12	Aqueous	Hydrocarbons, Total Petroleum Anions by Ion Chromatography Solids, Total Dissolved 8260-Volatile Organic Compounds-BTEX
B12102389-002	PNR-23	10/25/12 9:20	10/26/12	Aqueous	Same As Above
B12102389-003	PNR-24	10/25/12 10:03	10/26/12	Aqueous	Same As Above
B12102389-004	PNR-20	10/25/12 11:32	10/26/12	Aqueous	Same As Above
B12102389-005	PNR-20 DUP	10/25/12 11:32	10/26/12	Aqueous	Same As Above
B12102389-006	M-31	10/25/12 13:10	10/26/12	Aqueous	Same As Above
B12102389-007	PNR-7	10/25/12 14:01	10/26/12	Aqueous	Same As Above
B12102389-008	PNR-RW-10	10/25/12 14:30	10/26/12	Aqueous	Same As Above
B12102389-009	PNR-RW-10 DUP	10/25/12 14:30	10/26/12	Aqueous	Same As Above
B12102389-010	PNR EQ BLK	10/25/12 11:55	10/26/12	Aqueous	Hydrocarbons, Total Petroleum 8260-Volatile Organic Compounds-BTEX
B12102389-011	Trip Blank 1 Lot101612 B-TS SHP0259	10/25/12 14:30	10/26/12	Trip Blank	8260-Volatile Organic Compounds-BTEX
B12102389-012	Trip Blank 2 Lot101612 B-TS SHP0259	10/24/12 17:23	10/26/12	Trip Blank	Same As Above
B12102389-013	Trip Blank 3 Lot101612 B-TS SHP0259	10/25/12 10:03	10/26/12	Trip Blank	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Geosyntec Consultants
Project: Biere 1-22 Well Site
Sample Delivery Group: B12102389

Report Date: 11/01/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-G were subcontracted to Energy Laboratories, 400 W Boxelder Rd, Gillette, WY, EPA Number WY00006.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-001
Client Sample ID PNR-19

Report Date: 11/01/12
Collection Date: 10/24/12 17:23
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5470	mg/L		10		A2540 C	10/29/12 10:01 / ksm
INORGANICS							
Chloride	2160	mg/L	D	10		E300.0	10/27/12 16:14 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.74	ug/L	J	1.0		SW8260B	10/30/12 09:50 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 09:50 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/30/12 09:50 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 09:50 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 09:50 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 09:50 / nl
Surr: 1,2-Dichloroethane-d4	99.0	%REC		70-130		SW8260B	10/30/12 09:50 / nl
Surr: Dibromofluoromethane	104	%REC		77-126		SW8260B	10/30/12 09:50 / nl
Surr: p-Bromofluorobenzene	120	%REC		76-127		SW8260B	10/30/12 09:50 / nl
Surr: Toluene-d8	103	%REC		79-122		SW8260B	10/30/12 09:50 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:45 / eli-g

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-002
Client Sample ID PNR-23

Report Date: 11/01/12
Collection Date: 10/25/12 09:20
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	4820	mg/L		10		A2540 C	10/29/12 10:01 / ksm
INORGANICS							
Chloride	1360	mg/L	D	10		E300.0	10/27/12 16:29 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.24	ug/L	J	1.0		SW8260B	10/30/12 14:00 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 14:00 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/30/12 14:00 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 14:00 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 14:00 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 14:00 / nl
Surr: 1,2-Dichloroethane-d4	99.0	%REC		70-130		SW8260B	10/30/12 14:00 / nl
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	10/30/12 14:00 / nl
Surr: p-Bromofluorobenzene	118	%REC		76-127		SW8260B	10/30/12 14:00 / nl
Surr: Toluene-d8	102	%REC		79-122		SW8260B	10/30/12 14:00 / nl
- The sample was received in the laboratory with a pH > 2. The pH was 5.							
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:49 / eli-g

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-003
Client Sample ID PNR-24

Report Date: 11/01/12
Collection Date: 10/25/12 10:03
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	5050	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	852	mg/L	D	5		E300.0	10/27/12 16:44 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.31	ug/L	J	1.0		SW8260B	10/30/12 14:28 / nl
Ethylbenzene	11	ug/L		1.0		SW8260B	10/30/12 14:28 / nl
Toluene	0.15	ug/L	J	1.0		SW8260B	10/30/12 14:28 / nl
m+p-Xylenes	0.74	ug/L	J	1.0		SW8260B	10/30/12 14:28 / nl
o-Xylene	4.3	ug/L		1.0		SW8260B	10/30/12 14:28 / nl
Xylenes, Total	5.1	ug/L		1.0		SW8260B	10/30/12 14:28 / nl
Surr: 1,2-Dichloroethane-d4	96.0	%REC		70-130		SW8260B	10/30/12 14:28 / nl
Surr: Dibromofluoromethane	103	%REC		77-126		SW8260B	10/30/12 14:28 / nl
Surr: p-Bromofluorobenzene	118	%REC		76-127		SW8260B	10/30/12 14:28 / nl
Surr: Toluene-d8	104	%REC		79-122		SW8260B	10/30/12 14:28 / nl
- The sample was received in the laboratory with a pH > 2. The pH was 5.							
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	3	mg/L		1		E1664A	10/30/12 15:02 / eli-g

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-004
Client Sample ID PNR-20

Report Date: 11/01/12
Collection Date: 10/25/12 11:32
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	36800	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	20800	mg/L	D	100		E300.0	10/29/12 21:32 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	17	ug/L		1.0		SW8260B	10/30/12 14:57 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 14:57 / nl
Toluene	0.25	ug/L	J	1.0		SW8260B	10/30/12 14:57 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 14:57 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 14:57 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 14:57 / nl
Surr: 1,2-Dichloroethane-d4	108	%REC		70-130		SW8260B	10/30/12 14:57 / nl
Surr: Dibromofluoromethane	108	%REC		77-126		SW8260B	10/30/12 14:57 / nl
Surr: p-Bromofluorobenzene	122	%REC		76-127		SW8260B	10/30/12 14:57 / nl
Surr: Toluene-d8	100	%REC		79-122		SW8260B	10/30/12 14:57 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	4	mg/L		1		E1664A	10/30/12 15:32 / eli-g

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-005
Client Sample ID PNR-20 DUP

Report Date: 11/01/12
Collection Date: 10/25/12 11:32
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	36400	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	20600	mg/L	D	100		E300.0	10/29/12 21:48 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	17	ug/L		1.0		SW8260B	10/30/12 15:25 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 15:25 / nl
Toluene	0.24	ug/L	J	1.0		SW8260B	10/30/12 15:25 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 15:25 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 15:25 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 15:25 / nl
Surr: 1,2-Dichloroethane-d4	109	%REC		70-130		SW8260B	10/30/12 15:25 / nl
Surr: Dibromofluoromethane	109	%REC		77-126		SW8260B	10/30/12 15:25 / nl
Surr: p-Bromofluorobenzene	121	%REC		76-127		SW8260B	10/30/12 15:25 / nl
Surr: Toluene-d8	102	%REC		79-122		SW8260B	10/30/12 15:25 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:56 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-006
Client Sample ID M-31

Report Date: 11/01/12
Collection Date: 10/25/12 13:10
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	48400	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	31100	mg/L	D	100		E300.0	10/27/12 14:00 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	26	ug/L		2.5		SW8260B	10/30/12 15:53 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 16:49 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/30/12 16:49 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 16:49 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 16:49 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 16:49 / nl
Surr: 1,2-Dichloroethane-d4	113	%REC		70-130		SW8260B	10/30/12 16:49 / nl
Surr: Dibromofluoromethane	110	%REC		77-126		SW8260B	10/30/12 16:49 / nl
Surr: p-Bromofluorobenzene	124	%REC		76-127		SW8260B	10/30/12 16:49 / nl
Surr: Toluene-d8	100	%REC		79-122		SW8260B	10/30/12 16:49 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:46 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-007
Client Sample ID PNR-7

Report Date: 11/01/12
Collection Date: 10/25/12 14:01
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	47200	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	29400	mg/L	D	100		E300.0	10/29/12 22:03 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	32	ug/L		2.5		SW8260B	10/30/12 16:21 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/30/12 17:16 / nl
Toluene	0.11	ug/L	J	1.0		SW8260B	10/30/12 17:16 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/30/12 17:16 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/30/12 17:16 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/30/12 17:16 / nl
Surr: 1,2-Dichloroethane-d4	112	%REC		70-130		SW8260B	10/30/12 17:16 / nl
Surr: Dibromofluoromethane	110	%REC		77-126		SW8260B	10/30/12 17:16 / nl
Surr: p-Bromofluorobenzene	125	%REC		76-127		SW8260B	10/30/12 17:16 / nl
Surr: Toluene-d8	100	%REC		79-122		SW8260B	10/30/12 17:16 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:12 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than th reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-008
Client Sample ID PNR-RW-10

Report Date: 11/01/12
Collection Date: 10/25/12 14:30
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3380	mg/L		10		A2540 C	10/29/12 10:02 / ksm
INORGANICS							
Chloride	281	mg/L	D	5		E300.0	10/27/12 14:30 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	16	ug/L		5.0		SW8260B	10/31/12 22:47 / nl
Ethylbenzene	167	ug/L		5.0		SW8260B	10/31/12 22:47 / nl
Toluene	188	ug/L		50		SW8260B	10/31/12 20:27 / nl
m+p-Xylenes	368	ug/L		5.0		SW8260B	10/31/12 22:47 / nl
o-Xylene	129	ug/L		5.0		SW8260B	10/31/12 22:47 / nl
Xylenes, Total	497	ug/L		5.0		SW8260B	10/31/12 22:47 / nl
Surr: 1,2-Dichloroethane-d4	95.0	%REC		70-130		SW8260B	10/31/12 22:47 / nl
Surr: Dibromofluoromethane	103	%REC		77-126		SW8260B	10/31/12 22:47 / nl
Surr: p-Bromofluorobenzene	127	%REC		76-127		SW8260B	10/31/12 22:47 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/31/12 22:47 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	650	mg/L		1		E1664A	10/30/12 15:32 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-009
Client Sample ID PNR-RW-10 DUP

Report Date: 11/01/12
Collection Date: 10/25/12 14:30
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Dissolved TDS @ 180 C	3420	mg/L		10		A2540 C	10/29/12 10:03 / ksm
INORGANICS							
Chloride	278	mg/L	D	5		E300.0	10/27/12 15:15 / jrs
VOLATILE ORGANIC COMPOUNDS							
Benzene	17	ug/L		5.0		SW8260B	10/31/12 23:15 / nl
Ethylbenzene	211	ug/L		50		SW8260B	10/31/12 20:55 / nl
Toluene	242	ug/L		50		SW8260B	10/31/12 20:55 / nl
m+p-Xylenes	476	ug/L		50		SW8260B	10/31/12 20:55 / nl
o-Xylene	164	ug/L		50		SW8260B	10/31/12 20:55 / nl
Xylenes, Total	640	ug/L		50		SW8260B	10/31/12 20:55 / nl
Surr: 1,2-Dichloroethane-d4	98.0	%REC		70-130		SW8260B	10/31/12 23:15 / nl
Surr: Dibromofluoromethane	103	%REC		77-126		SW8260B	10/31/12 23:15 / nl
Surr: p-Bromofluorobenzene	126	%REC		76-127		SW8260B	10/31/12 23:15 / nl
Surr: Toluene-d8	108	%REC		79-122		SW8260B	10/31/12 23:15 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	730	mg/L		1		E1664A	10/30/12 15:33 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-010
Client Sample ID PNR EQ BLK

Report Date: 11/01/12
Collection Date: 10/25/12 11:55
DateReceived: 10/26/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/30/12 10:18 / nl
Ethylbenzene	0.15	ug/L	J	1.0		SW8260B	10/30/12 10:18 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/30/12 10:18 / nl
m+p-Xylenes	0.59	ug/L	J	1.0		SW8260B	10/30/12 10:18 / nl
o-Xylene	0.47	ug/L	J	1.0		SW8260B	10/30/12 10:18 / nl
Xylenes, Total	1.1	ug/L		1.0		SW8260B	10/30/12 10:18 / nl
Surr: 1,2-Dichloroethane-d4	97.0	%REC		70-130		SW8260B	10/30/12 10:18 / nl
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	10/30/12 10:18 / nl
Surr: p-Bromofluorobenzene	119	%REC		76-127		SW8260B	10/30/12 10:18 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/30/12 10:18 / nl
ORGANIC CHARACTERISTICS							
Total Petroleum Hydrocarbons	ND	mg/L		1		E1664A	10/30/12 14:47 / eli-g

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
J - Estimated value. The analyte was present but less than the reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-011
Client Sample ID Trip Blank 1 Lot101612 B-TS SHP0259

Report Date: 11/01/12
Collection Date: 10/25/12 14:30
DateReceived: 10/26/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/31/12 16:42 / nl
Surr: 1,2-Dichloroethane-d4	98.0	%REC		70-130		SW8260B	10/31/12 16:42 / nl
Surr: Dibromofluoromethane	102	%REC		77-126		SW8260B	10/31/12 16:42 / nl
Surr: p-Bromofluorobenzene	124	%REC		76-127		SW8260B	10/31/12 16:42 / nl
Surr: Toluene-d8	106	%REC		79-122		SW8260B	10/31/12 16:42 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-012
Client Sample ID Trip Blank 2 Lot101612 B-TS SHP0259

Report Date: 11/01/12
Collection Date: 10/24/12 17:23
DateReceived: 10/26/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/31/12 17:10 / nl
Surr: 1,2-Dichloroethane-d4	94.0	%REC		70-130		SW8260B	10/31/12 17:10 / nl
Surr: Dibromofluoromethane	102	%REC		77-126		SW8260B	10/31/12 17:10 / nl
Surr: p-Bromofluorobenzene	123	%REC		76-127		SW8260B	10/31/12 17:10 / nl
Surr: Toluene-d8	105	%REC		79-122		SW8260B	10/31/12 17:10 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Project: Biere 1-22 Well Site
Lab ID: B12102389-013
Client Sample ID Trip Blank 3 Lot101612 B-TS SHP0259

Report Date: 11/01/12
Collection Date: 10/25/12 10:03
DateReceived: 10/26/12
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
Ethylbenzene	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
Toluene	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
m+p-Xylenes	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
o-Xylene	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
Xylenes, Total	ND	ug/L		1.0		SW8260B	10/31/12 17:38 / nl
Surr: 1,2-Dichloroethane-d4	96.0	%REC		70-130		SW8260B	10/31/12 17:38 / nl
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	10/31/12 17:38 / nl
Surr: p-Bromofluorobenzene	122	%REC		76-127		SW8260B	10/31/12 17:38 / nl
Surr: Toluene-d8	107	%REC		79-122		SW8260B	10/31/12 17:38 / nl

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/31/12
Project: Biere 1-22 Well Site
Work Order: B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121029A
Sample ID: LCS3	Laboratory Control Sample				Run: BAL #11_121029B				10/29/12 10:00
Solids, Total Dissolved TDS @ 180 C	2000	mg/L	10	100	90	110			
Sample ID: B12102386-009A MS	Sample Matrix Spike				Run: BAL #11_121029B				10/29/12 10:01
Solids, Total Dissolved TDS @ 180 C	2840	mg/L	10	102	90	110			
Sample ID: B12102386-010A DUP	Sample Duplicate				Run: BAL #11_121029B				10/29/12 10:01
Solids, Total Dissolved TDS @ 180 C	1230	mg/L	10		90	110	0.3	5	
Sample ID: B12102389-009A DUP	Sample Duplicate				Run: BAL #11_121029B				10/29/12 10:03
Solids, Total Dissolved TDS @ 180 C	3410	mg/L	10		90	110	0.2	5	
Sample ID: MBLK3	Method Blank				Run: BAL #11_121029B				10/29/12 17:01
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/31/12
Project: Biere 1-22 Well Site
Work Order: B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1664A									Batch: G_TPH121030A
Sample ID: MBLK1210300000	Method Blank				Run: SUB-G198964				10/30/12 13:55
Total Petroleum Hydrocarbons	ND	mg/L	0.4						
Sample ID: LCS1210300000	Laboratory Control Sample				Run: SUB-G198964				10/30/12 13:56
Total Petroleum Hydrocarbons	15	mg/L	5.0	76	64	132			
Sample ID: LCSD1210300000	Laboratory Control Sample Duplicate				Run: SUB-G198964				10/30/12 13:57
Total Petroleum Hydrocarbons	16	mg/L	5.0	78	64	132	2.6	34	
Sample ID: G12100516-005AMS	Sample Matrix Spike				Run: SUB-G198964				10/30/12 14:01
Total Petroleum Hydrocarbons	17	mg/L	5.0	82	64	132			
Sample ID: G12100614-001EMS	Sample Matrix Spike				Run: SUB-G198964				10/30/12 14:03
Total Petroleum Hydrocarbons	17	mg/L	5.0	77	64	132			
Method: E1664A									Batch: G_TPH121030B
Sample ID: MBLK1210300000	Method Blank				Run: SUB-G198965				10/30/12 14:04
Total Petroleum Hydrocarbons	ND	mg/L	0.4						
Sample ID: LCS1210300000	Laboratory Control Sample				Run: SUB-G198965				10/30/12 14:07
Total Petroleum Hydrocarbons	17	mg/L	5.0	84	64	132			
Sample ID: LCSD1210300000	Laboratory Control Sample Duplicate				Run: SUB-G198965				10/30/12 14:10
Total Petroleum Hydrocarbons	16	mg/L	5.0	82	64	132	1.8	34	
Sample ID: G12100647-007BMS	Sample Matrix Spike				Run: SUB-G198965				10/30/12 14:16
Total Petroleum Hydrocarbons	17	mg/L	5.0	84	64	132			
Sample ID: B12102390-001A	Sample Matrix Spike				Run: SUB-G198965				10/30/12 14:18
Total Petroleum Hydrocarbons	16	mg/L	5.0	74	64	132			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/31/12
Project: Biere 1-22 Well Site
Work Order: B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0								Analytical Run: IC202-B_121019A	
Sample ID: ICV	Initial Calibration Verification Standard							10/26/12 08:38	
Chloride	23.2	mg/L	1.0	93	90	110			
Method: E300.0								Batch: R193797	
Sample ID: ICB	Method Blank				Run: IC202-B_121019A			10/19/12 13:44	
Chloride	ND	mg/L	0.04						
Sample ID: LFB	Laboratory Fortified Blank				Run: IC202-B_121019A			10/19/12 13:59	
Chloride	24.6	mg/L	1.0	98	90	110			
Sample ID: B12102386-006AMS	Sample Matrix Spike				Run: IC202-B_121019A			10/27/12 14:28	
Chloride	286	mg/L	2.6	99	90	110			
Sample ID: B12102386-006AMSD	Sample Matrix Spike Duplicate				Run: IC202-B_121019A			10/27/12 14:43	
Chloride	288	mg/L	2.6	100	90	110	0.5	20	
Method: E300.0								Analytical Run: IC202-B_121029A	
Sample ID: ICV	Initial Calibration Verification Standard							10/29/12 16:29	
Chloride	24.7	mg/L	1.0	99	90	110			
Method: E300.0								Batch: R194249	
Sample ID: ICB	Method Blank				Run: IC202-B_121029A			10/29/12 16:44	
Chloride	ND	mg/L	0.04						
Sample ID: LFB	Laboratory Fortified Blank				Run: IC202-B_121029A			10/29/12 17:00	
Chloride	23.9	mg/L	1.0	95	90	110			
Sample ID: B12102386-010AMS	Sample Matrix Spike				Run: IC202-B_121029A			10/29/12 21:01	
Chloride	264	mg/L	2.6	100	90	110			
Sample ID: B12102386-010AMSD	Sample Matrix Spike Duplicate				Run: IC202-B_121029A			10/29/12 21:17	
Chloride	268	mg/L	2.6	102	90	110	1.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants
Report Date: 10/31/12
Project: Biere 1-22 Well Site
Work Order: B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**								Analytical Run: IC203-B_121024A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/24/12 15:03	
Chloride	23.5	mg/L	1.0	94	90	110			
Method: **E300.0**								Batch: R194017	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121024A			10/24/12 15:18	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121024A			10/24/12 15:33	
Chloride	24.2	mg/L	1.0	97	90	110			
Sample ID: **B12102300-016AMS**	Sample Matrix Spike				Run: IC203-B_121024A			10/27/12 08:39	
Chloride	578	mg/L	5.3	104	90	110			
Sample ID: **B12102300-016AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121024A			10/27/12 09:12	
Chloride	542	mg/L	5.3	97	90	110	6.4	20	
Sample ID: **B12102389-009AMS**	Sample Matrix Spike				Run: IC203-B_121024A			10/27/12 15:30	
Chloride	812	mg/L	5.3	107	90	110			
Sample ID: **B12102389-009AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121024A			10/27/12 15:45	
Chloride	810	mg/L	5.3	106	90	110	0.2	20	
Method: **E300.0**								Analytical Run: IC203-B_121029A	
Sample ID: **ICV**	Initial Calibration Verification Standard							10/29/12 16:45	
Chloride	23.6	mg/L	1.0	94	90	110			
Method: **E300.0**								Batch: R194246	
Sample ID: **ICB**	Method Blank				Run: IC203-B_121029A			10/29/12 17:00	
Chloride	ND	mg/L	0.2						
Sample ID: **LFB**	Laboratory Fortified Blank				Run: IC203-B_121029A			10/29/12 17:16	
Chloride	24.3	mg/L	1.0	97	90	110			
Sample ID: **B12102300-026AMS**	Sample Matrix Spike				Run: IC203-B_121029A			10/29/12 21:17	
Chloride	1450	mg/L	13	100	90	110			
Sample ID: **B12102300-026AMSD**	Sample Matrix Spike Duplicate				Run: IC203-B_121029A			10/29/12 21:32	
Chloride	1450	mg/L	13	100	90	110	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants **Report Date:** 11/01/12

Project: Biere 1-22 Well Site **Work Order:** B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: R194243
Sample ID: LCS103012	Laboratory Control Sample				Run: SV5972.I_121030A				10/30/12 08:27
Benzene	5.32	ug/L	1.0	106	71	133			
Ethylbenzene	5.08	ug/L	1.0	102	78	131			
Toluene	5.28	ug/L	1.0	106	78	134			
m+p-Xylenes	9.84	ug/L	1.0	98	78	133			
o-Xylene	4.92	ug/L	1.0	98	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	95	70	130			
Surr: Dibromofluoromethane			1.0	100	77	126			
Surr: p-Bromofluorobenzene			1.0	121	76	127			
Surr: Toluene-d8			1.0	105	79	122			
Sample ID: BLK103012	Method Blank				Run: SV5972.I_121030A				10/30/12 09:22
Benzene	ND	ug/L	1.0						
Ethylbenzene	ND	ug/L	1.0						
Toluene	ND	ug/L	1.0						
m+p-Xylenes	ND	ug/L	1.0						
o-Xylene	ND	ug/L	1.0						
Xylenes, Total	ND	ug/L	1.0						
Surr: 1,2-Dichloroethane-d4			1.0	98	70	130			
Surr: Dibromofluoromethane			1.0	101	77	126			
Surr: p-Bromofluorobenzene			1.0	122	76	127			
Surr: Toluene-d8			1.0	105	79	122			
Sample ID: B12102389-001Cms	Sample Matrix Spike				Run: SV5972.I_121030A				10/30/12 10:46
Benzene	5.92	ug/L	1.0	104	71	133			
Ethylbenzene	4.80	ug/L	1.0	96	78	131			
Toluene	5.12	ug/L	1.0	102	78	134			
m+p-Xylenes	9.20	ug/L	1.0	92	78	133			
o-Xylene	4.72	ug/L	1.0	94	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	102	70	130			
Surr: Dibromofluoromethane			1.0	105	77	126			
Surr: p-Bromofluorobenzene			1.0	122	76	127			
Surr: Toluene-d8			1.0	104	79	122			
Sample ID: B12102389-001Cmsd	Sample Matrix Spike Duplicate				Run: SV5972.I_121030A				10/30/12 11:14
Benzene	6.08	ug/L	1.0	107	71	133	2.7	20	
Ethylbenzene	4.88	ug/L	1.0	98	78	131	1.7	20	
Toluene	5.24	ug/L	1.0	105	78	134	2.3	20	
m+p-Xylenes	9.44	ug/L	1.0	94	78	133	2.6	20	
o-Xylene	4.84	ug/L	1.0	97	79	136	2.5	20	
Surr: 1,2-Dichloroethane-d4			1.0	101	70	130			
Surr: Dibromofluoromethane			1.0	103	77	126			
Surr: p-Bromofluorobenzene			1.0	122	76	127			
Surr: Toluene-d8			1.0	105	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Geosyntec Consultants **Report Date:** 11/01/12

Project: Biere 1-22 Well Site **Work Order:** B12102389

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: R194389
Sample ID: LCS103112	Laboratory Control Sample				Run: SV5972.I_121031A				10/31/12 13:01
Benzene	5.16	ug/L	1.0	103	71	133			
Ethylbenzene	4.84	ug/L	1.0	97	78	131			
Toluene	5.28	ug/L	1.0	106	78	134			
m+p-Xylenes	9.40	ug/L	1.0	94	78	133			
o-Xylene	4.68	ug/L	1.0	94	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	95	70	130			
Surr: Dibromofluoromethane			1.0	101	77	126			
Surr: p-Bromofluorobenzene			1.0	125	76	127			
Surr: Toluene-d8			1.0	108	79	122			
Sample ID: BLK103112	Method Blank				Run: SV5972.I_121031A				10/31/12 13:55
Benzene	ND	ug/L	1.0						
Ethylbenzene	ND	ug/L	1.0						
Toluene	ND	ug/L	1.0						
m+p-Xylenes	ND	ug/L	1.0						
o-Xylene	ND	ug/L	1.0						
Xylenes, Total	ND	ug/L	1.0						
Surr: 1,2-Dichloroethane-d4			1.0	95	70	130			
Surr: Dibromofluoromethane			1.0	101	77	126			
Surr: p-Bromofluorobenzene			1.0	123	76	127			
Surr: Toluene-d8			1.0	106	79	122			
Sample ID: B12102389-009Cms	Sample Matrix Spike				Run: SV5972.I_121031A				10/31/12 21:23
Benzene	568	ug/L	50	110	71	133			
Ethylbenzene	800	ug/L	50	118	78	131			
Toluene	824	ug/L	50	116	78	134			
m+p-Xylenes	1610	ug/L	50	114	78	133			
o-Xylene	720	ug/L	50	111	79	136			
Surr: 1,2-Dichloroethane-d4			100	95	70	130			
Surr: Dibromofluoromethane			100	102	77	126			
Surr: p-Bromofluorobenzene			100	122	76	127			
Surr: Toluene-d8			100	106	79	122			
Sample ID: B12102389-009Cmsd	Sample Matrix Spike Duplicate				Run: SV5972.I_121031A				10/31/12 21:51
Benzene	560	ug/L	50	108	71	133	1.4	20	
Ethylbenzene	720	ug/L	50	102	78	131	11	20	
Toluene	784	ug/L	50	108	78	134	5.0	20	
m+p-Xylenes	1450	ug/L	50	97	78	133	11	20	
o-Xylene	664	ug/L	50	100	79	136	8.1	20	
Surr: 1,2-Dichloroethane-d4			100	94	70	130			
Surr: Dibromofluoromethane			100	101	77	126			
Surr: p-Bromofluorobenzene			100	123	76	127			
Surr: Toluene-d8			100	106	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Geosyntec Consultants

B12102389

Login completed by: Jill M. Lippard
Date Received: 10/26/2012
Reviewed by: BL2000\tedwards
Received by: lg
Reviewed Date: 10/26/2012
Carrier name: Return-UPS Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ On Ice		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Temp Blank temperature for Cooler 1 was 1.0℃, Cooler 2 was 1.2℃, and Cooler 3 was 0.8℃.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Geosyntec Consultants	Project Name, PWS, Permit, Etc. Biere 1-22 Well Site	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: 1201 Third Ave, Suite 330 Seattle, WA 98101	Contact Name: Christa Tyrrell Phone/Fax: 406.209.1905(c)	Email: ctyrrell@geosyntec.com	Sampler: (Please Print) Cook Murch
Invoice Address: same	Invoice Contact & Phone: Christa Tyrrell 206.496.1451(o)	Purchase Order:	Quote/Bottle Order: 63734

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: ____ ☐ Other: ____

☐ A2LA ☐ EDD/EDT(Electronic Data) Format: ____ ☐ LEVEL IV ☐ NELAC

Number of Containers Sample Type: A W S V B O Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

R U S H — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Cooler #1 1.0° Cooler #2 1.2° Cooler #3 0.8°

Shipped by: Fed Ex Ground
Cooler ID(s):
Receipt Temp: See notes cJB
On Ice: (Yes) No
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	TDS, Cl	BTEX, TPH	SEE ATTACHED	Normal Turnaround (TAT)	LABORATORY USE ONLY
2	1 PNR-19	10/24/12	17:23	6W	X	X		X	B12102389-001
2	2 PNR-23	10/25/12	09:20	6W	X	X		X	-002
3	3 PNR-24	10/25/12	10:03	6W	X	X		X	-003
3	4 PNR-20	10/25/12	11:32	6W	X	X		X	-004
3	5 PNR-20 DUP	10/25/12	11:32	6W	X	X		X	-005
2	6 M-31	10/25/12	13:10	6W	X	X		X	-006
2	7 PNR-7	10/25/12	14:01	6W	X	X		X	-007
1	8 PNR-RW-10	10/25/12	14:30	6W	X	X		X	-008
1	9 PNR-RW-10 DUP	10/25/12	14:30	6W	X	X		X	-009
3	10 PNR EQ BLK	10/25/12	11:55	5W		X		X	-010

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
Cook Murch, Catena	10/25/12	Cook Murch	UPS		
Sample Disposal: Return to Client: ____		Lab Disposal: ____	Received by Laboratory:	10/26/12 9:15	[signature]

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

Page ____ of ____

PLEASE PRINT (Provide as much information as possible.)

Company Name: Geosyntec

Report Mail Address (Required):

❑ No Hard Copy Email:

Invoice Address (Required):

❑ No Hard Copy Email:

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.

Contact Name: Phone/Fax: Cell:

Invoice Contact & Phone:

Sample Origin State:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print)

Purchase Order:

Quote/Bottle Order:

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Cooler #1 1.0°
Cooler #2 1.2°
Cooler #3 0.8°

Shipped by: Ken Upstad

Cooler ID(s):

Receipt Temp: See comments

On Ice: (Y) N

Custody Seal: On Bottle (Y) N; On Cooler (Y) N

Intact (Y) N

Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	LABORATORY USE ONLY
1	TB 1 101612-B TSSHP0259				B12102389-011
2	TB 2 101612-B TSSHP0259				-012
3	TB 3 101612-B TSSHP0259				-013
4					
5					
6					
7					
8					
9					
10					

Custody Record MUST be Signed

Relinquished by (print): Date/Time: Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 10-26-12 9:15 Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.